TERI CENTER FOR RESEARCH AND LIFE PLANNING

ACOUSTICAL SITE ASSESSMENT REPORT

P02-019; LOG NO. 02-08-046

November~~August~~ 2007

Project Proponent:

T.E.R.I., INC.
251 Airport Road
Oceanside, California 92054

Prepared for:

COUNTY OF SAN DIEGO
DEPARTMENT OF PLANNING AND LAND USE
5201 Ruffin Road, Suite B
San Diego, California 92123-1666

Prepared by:

Charles Terry, County-approved CEQA Consultant
HELIX ENVIRONMENTAL PLANNING, INC.
7578 El Cajon Boulevard, Suite 200
La Mesa, California 91941

Principal Investigator:

Charles Terry
HELIX Environmental Planning, Inc.

Acoustical Site Assessment Report

Training Education and Research Institute (TERI)
Center For Research and Life Planning
P02-019; ER 02-08-046

Lead Agency:

County of San Diego
Department of Planning and Land Use (DPLU)
5201 Ruffin Road, Suite B
San Diego, CA 92123
Contact: ~~Lori Spar~~Kristin Blackson, Environmental Coordinator
Phone: 858.694.~~2969~~3021
Contact: Alyssa N. Maxson, DPLU Project Manager
Phone: 858.694.3737

Preparer:

Charles Terry, County-approved CEQA Consultant
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard, Suite 200
619.462.1515

Project Proponent:

Ms. Cheryl Kilmer
T.E.R.I., Inc.
251 Airport Road
Oceanside, California 92054

November 13, 2007~~August 8, 2007~~

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GLOSSARY OF TERMS AND ACRONYMS

A-Weighted Sound Levels	Decibels (referenced to 20 micro-Pascals) as measured with an A-weighting network of standard sound level meter, abbreviated dB(A)
ANSI	American National Standards Institute
Background Noise	The measured ambient noise level associated with all existing environmental, transportation, and community noise sources, in the absence of any audible construction activity
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level: A 24-hour average, where sound levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dB weighting, and sound levels during the nighttime hours of 10:00 p.m. to 7 a.m. have an added 10 dB weighting; this is similar to and often used interchangeably with L_{DN}
Construction Site	For purposes of noise and vibration control requirements, the contract limits of construction; this includes right-of-way lines, property lines, construction easement boundary or property lines, and contractor staging areas outside the defined boundary lines, used expressly for construction
DNL or L_{DN}	Day-Night Sound Level - A 24-hour average, where sound levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dB weighting, but no added weighting on the evening hours, abbreviated as DNL or L_{DN}
dB	Decibel
dB re	dB reference to
dBA	A-weighted sound pressure level
Daytime	The period from 7:00 a.m. to 10 p.m.
Evening	The period from 7:00 p.m. to 10:00 p.m.
HVAC	Heating, ventilating, and air conditioning

TERMS AND ACRONYMS (cont.)

L_{EQ}	The equivalent sound level, or the continuous sound level, that represents the same sound energy as the varying sound levels, over a specified monitoring period
Leq(h)	One-Hour Equivalent Noise Level
L_{MAX}	The root-mean-square (rms) value of the period measurement peak noise level
mph	Miles per hour
Nighttime	Periods other than daytime (as defined above), including legal holidays
Noise	Any audible sound that has the potential to annoy or disturb humans, or to cause an adverse psychological or physiological effect in humans
Noise Level Measurements	Unless otherwise indicated, the use of A-weighted and "slow" response of instrument complying with at least Type 2 requirements of latest revision of American National Standard Institute (ANSI) S1.4. Specification for Sound Level Meters
Noise-sensitive Location	A location where particular sensitivities to noise exist, such as residential areas, institutions, hospitals, parks, or other environmentally sensitive areas
NSLU	Noise Sensitive Land Use
Octave-Filtered and Octave-Filtered Data	A contiguous series of continuous sound spectra centered about the stated frequency with half of the bandwidth above and half below the stated frequency; this data is used for machinery noise analysis and barrier effectiveness calculations
rms	Root mean square
sec	Second
Sound Transmission Class (STC)	A single number rating calculated in accordance with ASTM E413, using values of sound transmission loss; it provides an estimate of the performance of a partition in certain common sound insulation problems

TERMS AND ACRONYMS (cont.)

VdB	Vibration velocity level in decibels
Vibration	Velocity in microinches per second; vibration levels are expressed as velocity levels in decibels referenced to one microinch per second, abbreviated VdB

EXECUTIVE SUMMARY

The proposed TERI Center for Research and Life Planning (hereafter referred to as "Proposed Project" or "Project") consists of a non-profit educational and research facility for children and adults with developmental and learning disabilities

The Proposed Project would be developed on a 19.98-acre site located at 555 Deer Springs Road in northern San Diego County. The site is located in the North County Metropolitan Subregional Plan area. The Assessor's Parcel Number (APN) for the property is 182-260-10-00.

The Project site is located in an inland valley and is relatively flat. The property gently slopes from an elevation of about 790 feet above mean sea level (amsl) in the northeast corner of the property to an elevation of 740 feet ~~above mean sea level~~amsl in the south. The site has been highly disturbed by past agricultural activities and a private residence. The site has scattered abandoned buildings and structures associated with past and current uses. The historic Merriam House lies in the central portion of the site near Deer Springs Road.

At buildout, the Project would consist of 11 buildings providing classrooms, an administration center, vocational training and maintenance building, therapy recreation center, childcare center, and horse stable. The total new building area would be 90,675 square feet and the existing historic Merriam House (approximately 2,025 square feet) would be incorporated into the Project, resulting in a total Project build-out of 92,700 square feet. The buildings would be constructed similar to an Early 20th Century California Craftsman design with a combination of stone, wood, and stucco surfaces combined with roofs composed of charcoal gray colored concrete tile. The research/education/training buildings and the administration building would be designed around a central lawn area.

Classrooms would be occupied by approximately 305 children and adults with developmental and learning disabilities. Teacher/student ratios may range between one-to-one and one-to-eight, with the majority of the students receiving direction on a one-to-three ratio. An estimated 204 staff, consisting of administrative and research staff, teachers, and support staff, would be employed at the campus. Students would arrive at and depart from the campus by bus or van on a daily basis, Monday through Friday. Cars, vans and buses traveling around the circular ~~p~~Project driveway would create on-site transportation noise. The only off-site transportation noise source is Deer Springs Road; no other off-site transportation noise sources have been identified.

On-site non-transportation noise sources include building heating, ventilating, and air conditioning (HVAC) systems, children using playgrounds, grounds maintenance~~,~~ and other small facilities use noise sources. Off-site non-transportation noise sources include greenhouse and other agricultural noise sources. No other off-site noise sources have been identified in the area that could potentially impact on-site Noise Sensitive Land Uses (NSLUs).

Without mitigation, the site development and build-out conditions would impact adjacent residences and be impacted by external transportation and possibly adjacent agricultural activities noise levels in excess of allowable levels. Mitigation measures include a noise easement prohibiting building construction or remodeling within a 200-foot distance of the centerline of Deer Springs Road. This easement may be relieved with the submittal of an exterior to interior noise study for the final building plan submittal for any building placed within this 200-foot noise easement. The expected site

facilities that would be controlled by this noise easement are the Multi-purpose Activity Center and the existing historic Merriam Ranch House. Other mitigation elements for the site include:

1. If temporary loud noise is being generated at the adjacent property, the outdoor playgrounds adjacent to the noise source will not be used;
2. A six-foot-high noise-control fence along the northern and eastern property lines, and around the ground-mounted HVAC units;
3. Five-foot-high parapet walls to shield the rooftop HVAC systems noise;
4. All rooftop AC units within 300 feet of the eastern property line, including the Administration Building and Research and Training Buildings 1 and 2, shall have a three-sided, five-foot noise control barrier facing the eastern property line and be located as close as possible to each affected HVAC unit; and

~~4.~~5. A temporary 12-foot-high construction noise control fence if ripping is required within 65 feet of a ~~Noise Sensitive Land Use (~~NSLU~~)~~.

With the implementation of these mitigation measures, the site can be developed in compliance with the applicable ordinances, and without any unmitigated significant impacts.

1.0 INTRODUCTION

The proposed TERI Center for Research and Life Planning Project (hereafter referred to as "Proposed Project" or "Project") consists of a non-profit educational and research facility for children and adults with developmental and learning disabilities.

1.1 Project Location and Description

Project Location

The Proposed Project is located in unincorporated County of San Diego (County) within the Twin Oaks community of the North County Metropolitan Subregional Plan planning area. The 19.98-acre Project site is located at 555 Deer Springs Road, southeast of the intersection of Deer Springs Road and Sarver Lane, approximately 1.5 miles west of I-15 and approximately 3.0 miles north of SR 78, as shown on Figure 1, Regional Location Map, and Figure 2, ~~Vicinity~~ Specific Location Map. The property is located approximately 1,500 feet northeast of the present San Marcos city limits and lies within the City's Sphere of Influence. The Project site is located about 4,700 feet northwest of the Escondido city boundary. The Assessor's Parcel Number (APN) for the property is 182-260-10-00. The Project site consists of a portion of the Southeasterly Quarter of the Northeast Quarter of Section 25, Township 11 South, Range 3 West San Bernardino Base and Meridian, County of San Diego, State of California. It is located in the unincorporated portion of San Diego County, in the Twin Oaks Valley area, east of the intersection of Sarver Lane and Deer Springs Road.

The Project site is located in an inland valley and is relatively flat. The property gently slopes from an elevation of about 790 feet ~~above mean sea level~~amsl in the northeast corner of the property to an elevation of 740 feet ~~above mean sea level~~amsl in the south. The site has been highly disturbed by past agricultural activities and a private residence. The site has scattered abandoned buildings and structures associated with past and current uses. The historic Merriam House lies in the central portion of the site near Deer Springs Road. Previous on-site agricultural activity is evidenced by rows of citrus trees in the northeastern area of the site. A grove of olive trees also occurs on site. A small vegetable garden to the north of the oak trees is currently being tended. An aerial photo of the site is presented on Figure ~~4~~3.

The Twin Oaks community is dominated by agricultural uses, greenhouses, and scattered residential development along arterial and collector roads and atop surrounding hillsides. Two single-family residences are located immediately to the north of the Project site. Additional single-family residences, two large churches, an equestrian center, and greenhouses are located on the north side of Deer Springs Road. To the east is a single-family residence with accessory agricultural use, and the Golden Door spa resort. To the south and west of the Project site are commercial agricultural operations.

The two single-family homes adjacent to the northern property boundary are shown on Figure 4.

Project Description

The Project would consist of 11 new buildings totaling 90,675 square feet (s.f.). The existing historic 2,025-s.f. Merriam Ranch House also would be incorporated into the Project, for a total building area

of 92,700 s.f. Conceptual site plans are presented on Figure ~~3~~5. The 11 buildings and their uses are described below:

1. Administration Building. The Administration Building would be two stories in height and would be occupied by 20 to 25 administrators and support staff. The first floor would consist of 6,537 s.f., and the second floor would contain 4,967 s.f.

2. Research/Education/Training Buildings. These facilities would serve as the primary base for many of the formal aspects of the program, as well as a daycare center that would be housed in Building No. 1. These Research/Education/Training facilities are housed in five separate buildings, numerically identified as Buildings No. 1 through 5 and consisting of 12,043 s.f., 8,518 s.f.; 7,089 s.f.; 10,581 s.f.; and 10,522 s.f., respectively. A total of about 305 children and adults would use these facilities.

3. Aquatic/Therapy/Recreation Center. The recreation center would contain a pool and therapeutic and fitness center. It would be used by the children enrolled in the summer day camp and Saturday program, as well as clients on the campus. This building would be 6,579 s.f. in size.

4. Multi-purpose Activity Center. This 13,379-s.f. building would allow for recreational activities, such as basketball and volleyball. These activities would not involve participation against other teams or evening or weekend organized sporting events. This building also would be used for periodic training of parents and staff and for client programs.

5. Agricultural/Vocational/Maintenance Building and Greenhouse. This 7,460-s.f. building would be used for vocational training with approximately 20 clients using the facility at any one time. A live-in security guard also would be housed in this building in a partial second-story element. It also would be used to store files and supplies. A greenhouse, to be employed in relation to agricultural vocational training, would be developed adjoining this complex.

6. Stable. An approximately 3,000-s.f. stable would be constructed adjacent to an equestrian facilities yard. The stable would be located to the north of the Merriam House, which would be used in association with equestrian activities.

Total building area would encompass just over two acres, with an additional 6.61 acres of the site area devoted to agricultural uses including avocado, fruit and nut orchards, an olive grove, herb/vegetable/container foliage gardens, and an equestrian center. Other agriculture-related uses included in this acreage would be vocational training activities and a small greenhouse. About 5.7 additional acres would be devoted to play areas and natural open space. The research/education/ training buildings and the administration building would be designed around a central lawn area.

About four acres of the site would be used for improvements to on-site roadways that would provide direct access to the campus and accommodate 287 on-site parking spaces. The site would be accessed from Deer Creek Road, which runs along the southern boundary of the property and intersects with Deer Springs Road at the southwest corner of the Project site. Road dedication for the widening of Deer Springs Road along the Project frontage would encompass a little less than one acre. Other circulation improvements would include the installation of a traffic signal at the intersection of Deer Springs Road and Deer Creek Road. The Proposed Project would make fair-share contributions to

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Regional Location Map

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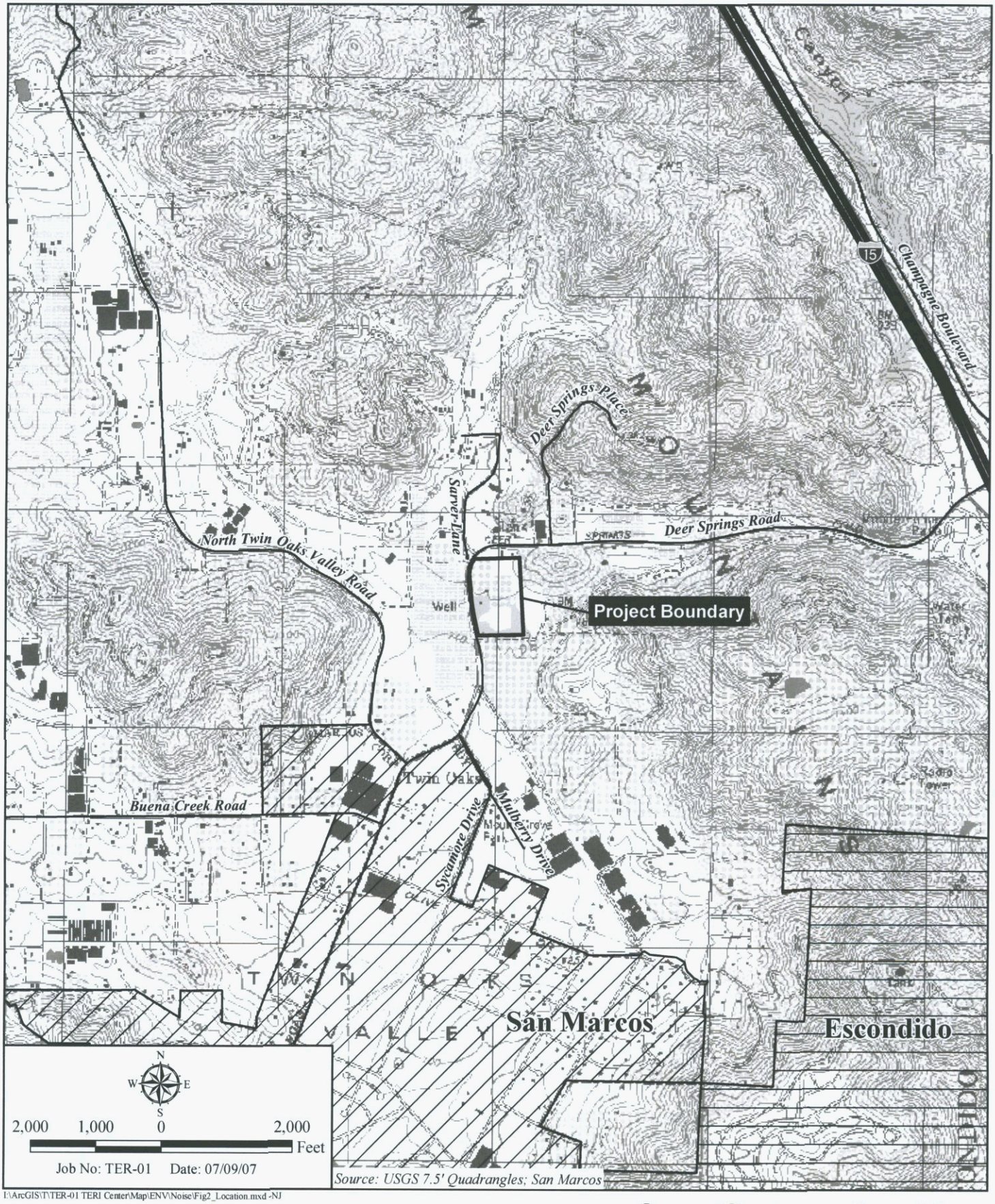
Figure 1



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Specific Location Map

TERI CENTER FOR RESEARCH AND LIFE PLANNING EIR - ACOUSTIC REPORT

HELIX

Figure 2

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Aerial Photo with On-site Measurement Location and Modeling Datum 0,0 Location

TERI CENTER FOR RESEARCH AND LIFE PLANNING EIR - ACOUSTIC REPORT

Figure 3

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Nearby Existing Residences

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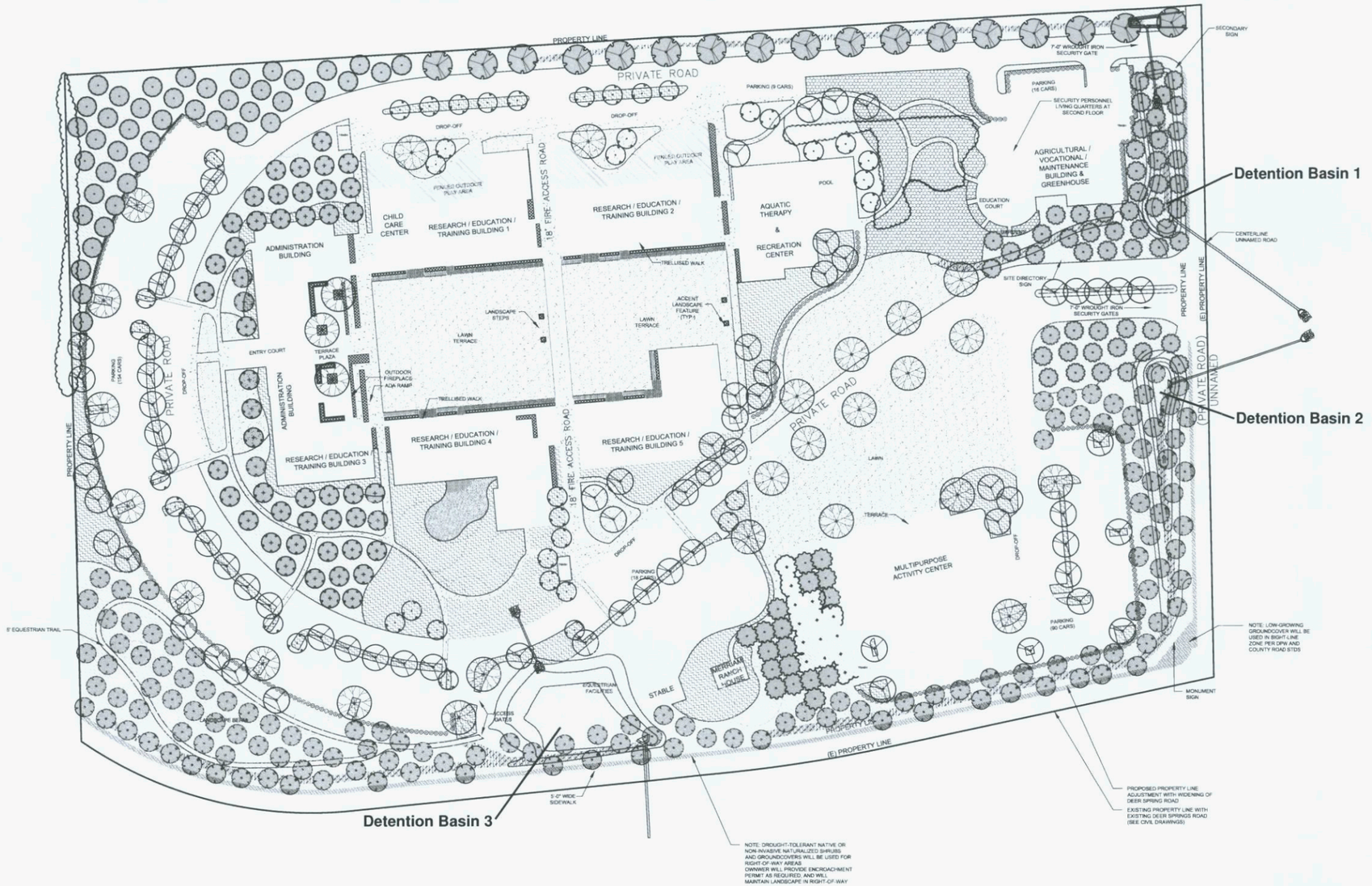
Figure 4



Source: Latitude 33 (2007) and Davis Davis Architects (2005)

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Conceptual Site Plan

TERI CENTER FOR RESEARCH AND LIFE PLANNING EIR - ACOUSTIC REPORT

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Figure 5

circulation improvements needed in the area. Table 1 presents a Statistical Abstract of the proposed on-site land uses.

Table 1
STATISTICAL ABSTRACT

Proposed Land Use	Acreage
Center Buildings/Merriam Ranch House/Stable	1.98
Equestrian Center and Trail	1.08
Orchards Groves, and Gardens	6.61
Play Areas and Open Space	5.12
On-site Roadways and Parking	4.23
Major Circulation (Deer Springs Road and Deer Creek Road)	0.96
PROJECT TOTAL	**19.98**

Classrooms would be occupied by approximately 305 children and adults with developmental and learning disabilities ranging in age from pre-school through adulthood. Teacher/student ratios may range between one to one and one to eight, with the majority of the learners receiving direction on a one to three ratio. An estimated 204 staff, consisting of administrative and research staff, teachers, and support staff, would be employed at the campus. Hours of operation would be from 9:00 a.m. to 3:00 p.m. Monday through Friday and 9:00 a.m. to 5:30 p.m. on Saturdays. Administrative personnel would remain on site until approximately 6:00 p.m. on weekdays. Students would arrive at and depart from the campus by bus or van on a daily basis, Monday through Friday. All staff would arrive and depart by private vehicle in the morning and afternoon. Approximately three special events would occur per year with an estimated attendance at each of about 300 persons.

Grading and Construction

The Proposed Project would require grading and improvements to most of the entire Project site. Earthwork on site would be balanced with an estimated 37,000 cubic yards of cut and 37,000 cubic yards of fill. Manufactured slopes would be created near the eastern property boundary and near the southern boundary. The eastern cut slope would be approximately 20 feet high with a 2:1 slope gradient. The maximum slope height near the southern boundary would be 10 feet, also with a 2:1 slope gradient. Construction activities would be restricted to between 7:00 a.m. and 7:00 p.m. Monday through Saturday, excluding public holidays. It is anticipated that the grading, site improvements, and initial building construction for the Proposed Project would take approximately 12 months.

Construction vehicles would include haul trucks, supply trucks, dozer, grader, paver, water truck and ancillary operating equipment such as diesel-electric generators and lifts. Grading and construction personnel would have personal vehicles. The construction staging area would be located on site, and construction vehicle access to the site would be via Deer Creek Road or at one of two existing entrances along Deer Springs Road.

1.2 Applicable Noise Regulations and Standards

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting, abbreviated "dBA," to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol "L_{EQ}" unless a different time period is specified; "L_{EQ}" is implied to mean a period of one hour. Some of the data may also be presented as octave-band-filtered and/or A-octave-band-filtered data, which are a series of sound spectra centered about each stated frequency, with half of the bandwidth above and half of the bandwidth below each stated frequency. This data is typically used for machinery noise analysis and barrier-effectiveness calculations.

The Community Noise Equivalent Level (CNEL) is a 24-hour average, where sound levels during the evening hours of 7 p.m. to 10 p.m. have an added 5 dB weighting, and sound levels during the nighttime hours of 10 p.m. to 7 a.m. have an added 10 dB weighting. This is similar to the Day-Night Sound Level (L_{DN}), which is a 24-hour average with 10 dB added weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on A-weighted decibels. These data unit metrics are used to express noise levels for both measurement and municipal noise ordinances and regulations, for land use guidelines, and enforcement of noise ordinances.

Noise emission data is often supplied per the industry standard format of Sound Power, which is the total acoustic power radiated from a given sound source as related to a reference power level. Sound Power differs from Sound Pressure, which measures the fluctuations in air pressure caused by the presence of sound waves, and is generally the format that describes noise levels as heard by the receiver. Sound Pressure is the actual noise experienced by a human or registered by a sound level instrument. When Sound Pressure is used to describe a noise source, it must specify the distance from the noise source to provide complete information. Sound Power is a specialized analytical method to provide information without the distance requirement, but it may be used to calculate the sound pressure at any desired distance.

The County has adopted interior and exterior noise standards. Noise regulations and standards that are applicable to the Proposed Project include the following:

Federal Regulations (as contained within the Noise Element of the County of San Diego General Plan)

23 CFR 772, Highway Noise Standards

This regulation establishes design noise levels applicable to all new federally aided highways. The standards and relation to land use are shown in Table 2:

Also included in these federal design criteria for new highways are procedures for highway noise analysis, identification of solutions, requirements for coordination with local officials, and noise abatement measures for both developed and undeveloped land. Implementation of this federal policy occurs by including the cost of abatement measures in the total project cost. These measures include shifting the highway's grade or alignment, property right acquisition for buffer zones or for barrier construction, construction of noise barriers, and in special cases, soundproofing schools, churches, libraries, hospitals and auditoriums.

Table 2 U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION DESIGN NOISE LEVEL/LAND USE RELATIONSHIPS	
Design Noise Level-- L10	Description of Land Use Category
55 dB(A) (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums. (Applies when no exterior NSLU or activity is identified.)
60 dB(A) (Exterior)	Amphitheaters, particular parks or portions of parks, or open spaces which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
70 dB(A) (Exterior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, recreation areas, playgrounds, active sports areas, and parks.
75 dB(A) (Exterior)	Developed lands, properties or activities not included in the above categories.

State Regulations

Per the State Building Code, 2001 California Building Code California Code of Regulations, Title 24, Part 2 (Volume 1) Section 1208A.8.2: Allowable Interior Noise Levels, interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metric shall be either the day-night average sound level (L_{DN}) or the CNEL consistent with the noise element of the local general plan. L_{DN} is the preferred metric for implementing these standards. Worst-case noise levels, either existing or future, shall be used as the basis for determining compliance with this section. Future noise levels shall be predicted for a period of at least 10 years from the time of building permit application.

Noise Element of the San Diego County General Plan Policy 4b

Project implementation would result in the exposure of any on- or off-site, existing or reasonably foreseeable future NSLUs to exterior or interior noise (including noise generated from the Project, together with noise from roads [existing and planned Circulation Element roadways], railroads, airports, heliports and all other noise sources) if any of the following are exceeded:

A. Exterior Locations:

i. 60 dB CNEL[1]; or

ii. An increase of 10 dB CNEL over pre-existing noise.

In the case of single-family residential detached NSLUs, exterior noise shall be measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

(1) Net lot area up to 4,000 square feet:	400 square feet
(2) Net lot area 4,000 sq. ft. to 10 acres:	10 percent of net lot area
(3) Net lot area over 10 acres:	1 acre

For all other projects, exterior noise shall be measured at all exterior areas provided for group or private usable open space.

B. Interior Locations:

45 dB (CNEL) except for the following cases:

i. Rooms that are usually occupied only a part of the day (schools, libraries, or similar facilities), the interior one-hour average sound level due to noise outside should not exceed 50 dB(A).

ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

County of San Diego Noise Ordinance

Unless a variance has been applied for and granted, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below.

Sec. 36.404. Sound Level Limits

(1) Noise level limits shall be governed by Section 36.404 (refer to Table 3); and

(2) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit which authorizes the noise - generating use or activity, and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, then implementation and compliance with such noise mitigation measures shall be deemed to constitute compliance with this section.

[1] If any adopted community noise standard is more stringent than the exterior criterion of 60 decibels CNEL, the analysis of any related impacts due to this standard shall be considered a potential land use impact. The criteria listed in this document are still applicable in all environmental acoustical studies for compliance with California Environmental Quality Act (CEQA) Guidelines for Determining Significance.

Table 3 SAN DIEGO COUNTY CODE SECTION 36.404 – SOUND LEVEL LIMITS		
ZONE	**TIME**	**APPLICABLE LIMIT ONE-HOUR AVERAGE SOUND LEVEL (dB)**
RS, RD, RR, RMH, A70, A72, S80, S81, S87, S88, S90, S92, RV, and RU. Use Regulations with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
RRO, RC, RM, C30, S86, RV, RU and V5. Use Regulations with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
S94, V4, and all other commercial zones	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
V1, V2 V1, V2 V1 V2	7 a.m. to 10 p.m. 10 p.m. to 7 a.m. 7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 55 50
V3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	70 65
M50, M52, M54	Anytime	70
S82, M58, and all other industrial zones.	Anytime	75

If the measured ambient level exceeds the applicable limit noted above, the allowable one-hour average sound level shall be the ambient noise level. The ambient noise level shall be measured when the alleged noise violation source is not operating.

The sound level limit at a location on a boundary between two (2) zoning districts is the arithmetic mean of the respective limits for the two districts; provided however, that the one-hour average sound level limit applicable to extractive industries, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone where the extractive industry is actually located.

Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section, measured at or beyond six (6) feet from the boundary of the easement upon which the equipment is located.

If the measured ambient level exceeds the applicable limit noted above, the allowable one-hour average sound level shall be the ambient noise level. The ambient noise level shall be measured when the alleged noise violation source is not operating.

The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts; provided however, that the one-hour average

sound level limit applicable to extractive industries, including but not limited to borrow pits and mines, shall be 75 dB at the property line regardless of the zone where the extractive industry is actually located.

Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

(Amended by Ord. No. 7094 (N.S.), effective 3-25-86; amended by Ord. No. 9478 (N.S.), effective 7-19-02; amended by Ord. No. 9621 (N.S.), effective 1-9-04)

Sec. 36.410. Construction Equipment

Except for emergency work,

(a) It shall be unlawful for any person to operate construction equipment between the hours of 7 p.m. of any day and 7 a.m. of the following day.

(b) It shall also be unlawful for any person to operate construction equipment on Sundays, and days appointed by the President, Governor, or the Board of Supervisors for a public fast, Thanksgiving, or holiday, but a person may operate construction equipment on the above-specified days between the hours of 10 a.m. and 5 p.m. at his residence or for the purpose of constructing a residence for himself, provided that the average sound level does not exceed 75 dB during the period of operation and that the operation of construction equipment is not carried out for profit or livelihood.

(c) It shall also be unlawful to operate any construction equipment so as to cause at or beyond the property line of any property upon which a legal dwelling unit is located an average sound level greater than 75 dB between the hours of 7 a.m. and 7 p.m. (Amended by Ord. No. 9700 (N.S.), effective 2-4-05)

Sec. 36.411. Containers and Construction Material

It shall be unlawful for any person to handle or transport or cause to be handled or transported in any public place, any container or any construction material in such a way as to create a disturbing, excessive, or offensive noise as defined under Section 36.402(s) of this ordinance.

Sec. 36.417. Exemptions

(a) Emergency Work. The provisions of this chapter shall not apply to any emergency work as defined herein, provided that (1) the noise Control Officer has been notified in advance, if possible, or as soon as practical after said emergency, and (2) any vehicle device, apparatus, or equipment used, related to or connected with emergency work is designed, modified, or equipped to reduce sounds produced to the lowest possible level consistent with effective operation of such vehicle, device, apparatus, or equipment.

(b) Sporting, Entertainment, Public Events. The provisions of this chapter shall not apply to:

(1) Those reasonable sounds emanating from authorized school bands, school athletic and school entertainment events.

(2) Sporting, entertainment and public events which are conducted pursuant to a license or permit issued by the County of San Diego for noise exceeding criteria, standards or levels as set forth in this chapter.

(3) Those reasonable sounds emanating from a sporting, entertainment, or public event; provided, however, it shall be unlawful to exceed those levels set forth in Section 36.404 when measured at or within the property lines of any property which is developed and used either in part or in whole for residential purposes unless a variance has been granted allowing sounds in excess of said levels.

(c) Federal or State Preempted Activities. The provisions of this chapter shall not apply to any activity to the extent regulation thereof has been preempted by State or Federal law.

(d) Minor Maintenance to Residential Property. The provisions of Section 36.404 shall not apply to noise sources associated with minor maintenance to property used either in part or in whole for residential purposes provided said activities take place between the hours of 7 a.m. and 8 p.m. on any day except Sunday, or between the hours of 10 a.m. and 8 p.m. on Sunday.

(e) Agricultural Operations. The provisions of Section 36.404 shall not apply to equipment associated with agricultural operations, provided that, all equipment and machinery powered by internal-combustion engines is equipped with a proper muffler and air intake silencer in good working order, and provided further that:

(1) Operations do not take place between 7 p.m. and the following 7 a.m.; or

(2) Such operations and equipment are utilized for the preparation, planting, harvesting, protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions; or

(3) Such operations and equipment are associated with agricultural pest control, provided the application is made in accordance with regulations or procedures administered by the County Department of Agriculture; or

(4) Such operations and equipment are associated with the application of agricultural chemicals provided the application is made in accordance with acceptable agricultural practices or upon the recommendation of an agricultural specialist.

(Amended by Ord. No. 7428 (N.S.), effective 2-4-88)

1.3 Environmental Setting and Existing Conditions

a. Settings and Location

As described above, the Project site is located in an inland valley and is relatively flat. The property gently slopes from an elevation of about 790 feet ~~above mean sea level~~amsl in the northeast corner of the property to an elevation of 740 feet ~~above mean sea level~~amsl in the south. The site has been highly disturbed by past agricultural activities and a residential use. The site has scattered abandoned buildings and structures associated with past and current uses. The historic Merriam House lies in the central portion of the site near Deer Springs Road. Low-profile shade structures, picnic tables, and benches have recently been added to the site to the east and northeast of the Merriam House. A stockpile of mostly metal irrigation pipes in the central southern portion of the project site is fenced off. There is currently no lighting source on the site except for interior lighting from an occupied recreational vehicle parked near the eastern site boundary (on-site security trailer). All of the existing on-site elements on the project site are rural in character, which is in keeping with the surrounding Twin Oaks neighborhood.

A large stand of mature eucalyptus trees is located around the perimeter of the southern half of the property. The trees are particularly dense in the southwest (where there is slightly varied terrain) and southeast corners of the site. A cluster of mature oak trees can be found to the north of the Merriam House. Previous on-site agricultural activity is evidenced by rows of citrus trees in the northeastern area of the site. A small vegetable garden to the north of the oak trees is currently being tended. Generally, the northern quarter of the site has low-lying non-native grasses.

The site is bounded by Deer Springs Road, which runs nearly north/south on the west side of the property and curves around to run east/west run to the north of the site, with a smaller agricultural parcel intervening between the site and the road on the northern side. To the east is open agricultural-zoned property and to the south is the existing private road (called Deer Creek Road on the Project drawings). This road would be paved, dedicated as a public road, and used for site access.

The Twin Oaks community is dominated by agricultural uses, greenhouses, and scattered residential development along arterial and collector roads and atop surrounding hillsides. Two single-family residences are located immediately to the north of the Project site. Additional single-family residences, two large churches, an equestrian center, and greenhouses are sited on the north side of Deer Springs Road. To the east is a single-family residence with accessory agricultural use and the Golden Door spa resort. To the south and west of the Project site are commercial agricultural operations. The southern property is currently left fallow in the vicinity of the Project except for an area currently used for beehives. Residential development is limited to a maximum of 1 dwelling unit per gross acre for the site zoning which is typical for the area.

b. Existing Noise Conditions

No on-site activities or conditions were observed which would have any exterior noise impacts. The present noise environment at the site is predominantly the result of vehicular traffic on Deer Springs Road. There is minimal vehicle traffic noise from Sarver Lane. No other notable transportation noise sources are in the vicinity of the Project.

Roadway information and descriptions are excerpted from the Traffic Impact Analysis prepared by Linscott, Law and Greenspan (LLG) for the TERI project (2007).

Deer Springs Road is classified as a Major Road (with bicycle network) by the County of San Diego's Circulation Element. Deer Springs Road is currently constructed as a two-lane roadway in the Project area, and is approximately 25 feet wide. Parking is generally prohibited. The shoulders are unimproved. Deer Springs Road has both horizontal and vertical curves, and rural characteristics. Commercial agriculture and residential properties front Deer Springs Road, and the posted speed limit is 55 miles per hour (mph) north of the Project site. The advised speed limit for the 90-degree curve along the Project frontage is 35 mph. This curve is currently constructed with a 435-foot radius. From Sarver Lane to Twin Oaks Valley Road, the posted speed limit is 45 mph. No bike lanes are present in the Project area. The southern terminus of Deer Springs Road is at Twin Oaks Valley Road. Existing traffic conditions are provided in Table 4.

Table 4
EXISTING TRAFFIC VOLUMES

Street Segment	Year	ADT[1]
Deer Springs Road		
Interstate 15 to Twin Oaks Valley Road	2003	16,300

[1] Average Daily Traffic Volume
Source: LLG 2007

Truck percentages in the Project vicinity were not available; however, based on experience with similar projects in San Diego County and on-site observations (see Table 4), a traffic mix of 3.5 percent medium and 2 percent heavy trucks are used for this analysis.

1.4 Methodology and Equipment

a. Noise Measuring Methodology and Procedures

Typically, a "one-hour" equivalent sound level measurement (L_{EQ}, A-Weighted) is recorded for at least one noise-sensitive location on the site. During the on-site noise measurement, start and end times are recorded and vehicle counts are made for cars, medium trucks (double-tires/two axles), and heavy trucks (three or more axles) for the corresponding road segment(s). Supplemental sound measurements of one hour or less in duration are often made to further describe the noise environment of the site.

For measurements of less than one hour in duration, the measurement time is long enough for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize; 15 minutes is usually sufficient for this purpose. The vehicle counts are then converted to one-hour equivalent volumes by using the appropriate multiplier. Other field data gathered includes measuring or estimating distances, angles-of-view, slopes, elevations, roadway grades, and vehicle speeds. This data was checked against the available maps and records.

The following equipment was used at the site to measure existing noise levels:

- Larson Davis System 720 Integrating Sound Level Meter
- Larson Davis Model CA250 Calibrator
- Windscreen and tripod for the sound level meter
- Distance measurement wheel
- Digital camera

The sound level meter was field-calibrated immediately prior to the noise measurement, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters American National Standard Institute (ANSI) SI.4-1983 (R2001). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

b. Noise Modeling Software

The Traffic Noise Model software, TNM Version 2.5, released in February 2004 by the U.S. Department of Transportation, was used for all traffic modeling in the preparation of this report. TNM calculates the daytime average Hourly Noise Level (HNL) from traffic data including road alignment, elevation, lane configuration, projected traffic volumes, estimated truck composition percentages and vehicle speeds. The HNL is equivalent to the L_{EQ}, and may be converted to CNEL by the addition of 2.0 dB, as suggested in the Wyle Laboratories Study (1973).

The daytime average hourly traffic volume, evaluated from Average Weekday Trips (AWT) data as shown in the Wyle Study to be simply 5.8 percent of AWT, is then applied to models in TNM. Current and future CNEL is calculated for predetermined receiver locations.

Modeling of the non-traffic outdoor noise environment is accomplished using ~~Cadna~~ CADNA Ver. 3.5, which is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. ~~Cadna~~ CADNA (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed CAD model and uses the most up-to-date calculation standards to predict outdoor noise impacts.

c. Noise Calculations

A field traffic noise measurement was conducted at the Project site during the day on Wednesday, June 13th, 2007. The measured noise level was 67.3 dBA L_{EQ}. This "one-hour" equivalent noise measurement for Deer Springs Road was made at the edge of Deer Creek Road approximately 60 feet from the centerline of the Deer Springs Road (two lanes). This location provided a public accessible location with as unobstructed traffic viewing angles as reasonably possible at the Site. This location was at grade, with the microphone positioned five feet above grade. Please refer to the aerial photo showing the noise measurement location (Figure ~~4~~3). A 15-minute continuously recorded sound level measurement was used to obtain an integrated and stable L_{EQ} to adjust and test the traffic noise model for reliability with site conditions. The calculated equivalent hourly traffic count during noise measurement, a complete tabular listing of all traffic data recorded during the sound measurement, and the TNM Modeling comparison to the measurement are presented in Tables 5, 6 and 7.

Table 5 ON-SITE NOISE MEASUREMENT CONDITIONS AND RESULTS	
Date	Wednesday, June 13, 2007
Time	11:45 p.m. – 12:00 p.m.
Conditions	Clear skies, winds from the west at 3 to 5 mph, temperature in the mid 80s with low humidity.
Measured Noise Level	67.3 dBA L_{EQ}

Table 6 ON-SITE TRAFFIC COUNT DURING NOISE MEASUREMENT						
Roadway	Duration		Autos	Medium Trucks	Heavy Trucks	Total
Deer Springs Road	Measured	15 minutes	150	12	11	173
	Overall	60 minutes	600	48	44	692

Table 7 CALCULATED VERSUS MEASURED TRAFFIC NOISE DATA				
Roadways	Measured	Calculated	Difference	Correction
Deer Springs Road	67.3 dBA L_{EQ}	68.1 dBA L_{EQ}	0.8 dBA L_{EQ}	None Applied

Site traffic noise modeling accuracy within 1 dBA of measured site values is considered acceptable for future site traffic noise predictions.

The TNM modeling data is presented in Appendices B1 through B4.

2.0 NOISE SENSITIVE LAND USES

2.1 Guidelines for the Determination of Significance

Project implementation would result in the exposure of any on- or off-site, existing or reasonably foreseeable future NSLUs to exterior or interior noise (including noise generated from the Project, together with noise from roads [existing and planned Circulation Element roadways], railroads, airports, heliports and all other noise sources) in excess of any of the following:

A. Exterior Locations:

i. 60 dB (CNEL)[2]; or

ii. An increase of 10 dB (CNEL) over pre-existing noise.

In the case of single-family residential detached NSLUs, exterior noise shall be measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum area:

(1) Net lot area up to 4,000 square feet:	400 square feet
(2) Net lot area 4,000 sq. ft. to 10 acres:	10 percent of net lot area
(3) Net lot area over 10 acres:	1 acre

For all other projects, exterior noise shall be measured at all exterior areas provided for group or private usable open space.

B. Interior Locations:

45 dB (CNEL) except for the following cases:

i. Rooms which are usually occupied only a part of the day (schools, libraries, or similar facilities), the interior one-hour average sound level due to noise outside should not exceed 50 decibels (A).

ii. Corridors, hallways, stairwells, closets, bathrooms, or any room with a volume less than 490 cubic feet.

2.2 Potential Noise Impacts

The site contains an existing historic single-family residence, which is subject to traffic noise from Deer Springs Road, and adjacent agricultural land uses. The adjacent property has a single-family residence, which is subject to the same noise sources. The adjacent site to the east is currently fallow agricultural property which may be used in the future for agricultural or residential land use this property has only a minor impact from roadway traffic. The property to the south is similar to the eastern property but

[2] If any adopted community noise standard is more stringent than the exterior criterion of 60 dB CNEL, the analysis of any related impacts due to this standard shall be considered a potential land use impact. The criteria listed in this document are still applicable in all environmental acoustical studies for compliance with CEQA Guidelines for Determining Significance.

subject to direct noise from Deer Springs Road. The property to the west is across Deer Springs Road is developed with greenhouses and is subject to noise from the roadway.

a. Potential Build-out Noise Conditions

Off-site Transportation Noise Sources

The only off-site transportation noise source is Deer Springs Road; no other transportation noise sources have been identified. Planning is based on the future year 2030 data as provided in the traffic study (LLG 2007). Table 8 provides the future roadway traffic volumes.

Table 8
YEAR 2030 STREET SEGMENT OPERATIONS

Street Segment	Future Capacity (LOS E)[1]	Year 2030 (+ Merriam Project)		Year 2030 (+ Merriam Project)			
	Without Project			With Project			
	ADT	ADT	LOS	ADT	LOS	Δ	SIG?
Deer Springs Road							
I-15 to Twin Oaks Valley Road	57,000	47,100	D	47,260	D	160	No

1. Capacities based on County of San Diego Roadway Classification and LOS table for build out of roadways to Circulation Element Standards.
2. Capacities based on City of San Marcos Roadway Classification and LOS table for build out of roadways to Circulation Element Standards.

Δ = Project attributable increase in volume (ADT)
ADT = Average Daily Traffic
V/C = Volume Capacity ratio
LOS = Level of Service
SIG? =Significant?

Traffic modeling would be based on a worst-case basis of future traffic, including the Merriam Project and the Proposed Project. The Merriam Project has been identified as a large potential residential development north of the Site on Deer Springs Road. The traffic data as used in the TNM model is provided in Table 9. TNM Traffic and receiver data is provided in Appendices B5 through B7.

Table 9
FUTURE TRAFFIC CONDITIONS

Roadway	Hourly Percentage	Total %	Autos	Medium	Heavy
		ADT	(Hourly)	(Hourly)	(Hourly)
Deer Springs	5.80%	100.00%	94.50%	3.50%	2.00%
		47,260	2,590	96	55

The distances of future traffic noise contours for Deer Springs Road, generated by the TNM model using the data provided above are shown in Table 10. A noise contour map for Deer Creek Road only is provided as color contour bands in Figure ~~5~~ 6 and contour lines as Figure ~~6~~7.

Table 10
CNEL CONTOUR DISTANCES FROM DEER SPRINGS ROAD

CNEL	Approximate Distance From Roadway Centerline
75	50 Feet
70	105 Feet
65	200 Feet
60	310 Feet

Off-site Non-transportation Noise Sources

Off-site non-transportation noise sources include greenhouses and other agricultural noise sources. No other noise off-site noise sources have been identified in the area that would provide noise impacts to NSLUs. These sources are addressed in Section 3.0.

On-site Transportation Noise Sources

Cars, vans and buses traveling around the circular project driveway would generate on-site traffic noise. TNM Modeling is based on the peak hour on-site traffic traveling at 15 mph. Table 11 provides the Project-generated traffic. The TNM modeler allows the specification of buses as a distinct vehicle type. TNM Modeling Data is shown in Appendices B8, B9, and B10.

Table 11
PROJECT TRIP GENERATION SUMMARY

Type	VOR	Vehicles (Bus/Van/ Car)	ADT	AM Peak Hour		Midday Peak Hour		PM Peak Hour	
				In	Out	In	Out	In	Out
Students	1 District/bus	14	56	14	14	14	14	0	0
Clients	12 clients/van	18	72	18	18	18	18	0	0
	1 client/ passenger car	13	52	13	13	13	13	0	0
Staff	1 staff/vehicle	194	427	194	0	0	154	0	40
	2 staff/vehicle	5	10	5	0	0	0	0	0
Delivery	1 delivery/vehicle	5	10	0	0	0	0	0	0
Visitors	2 visitors/vehicle	10	20	0	0	0	0	5	0
	Total		647	244	45	45	199	5	40

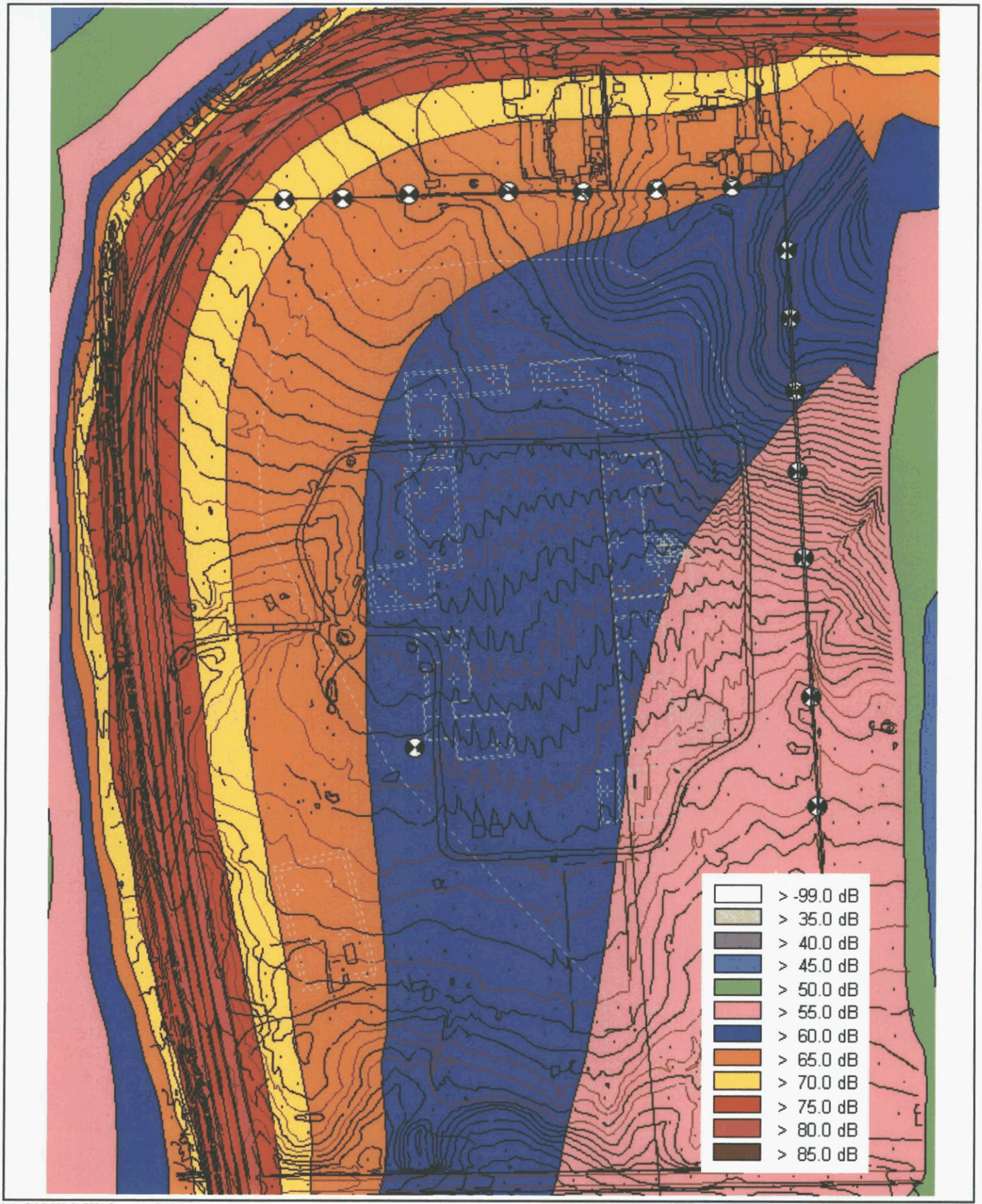

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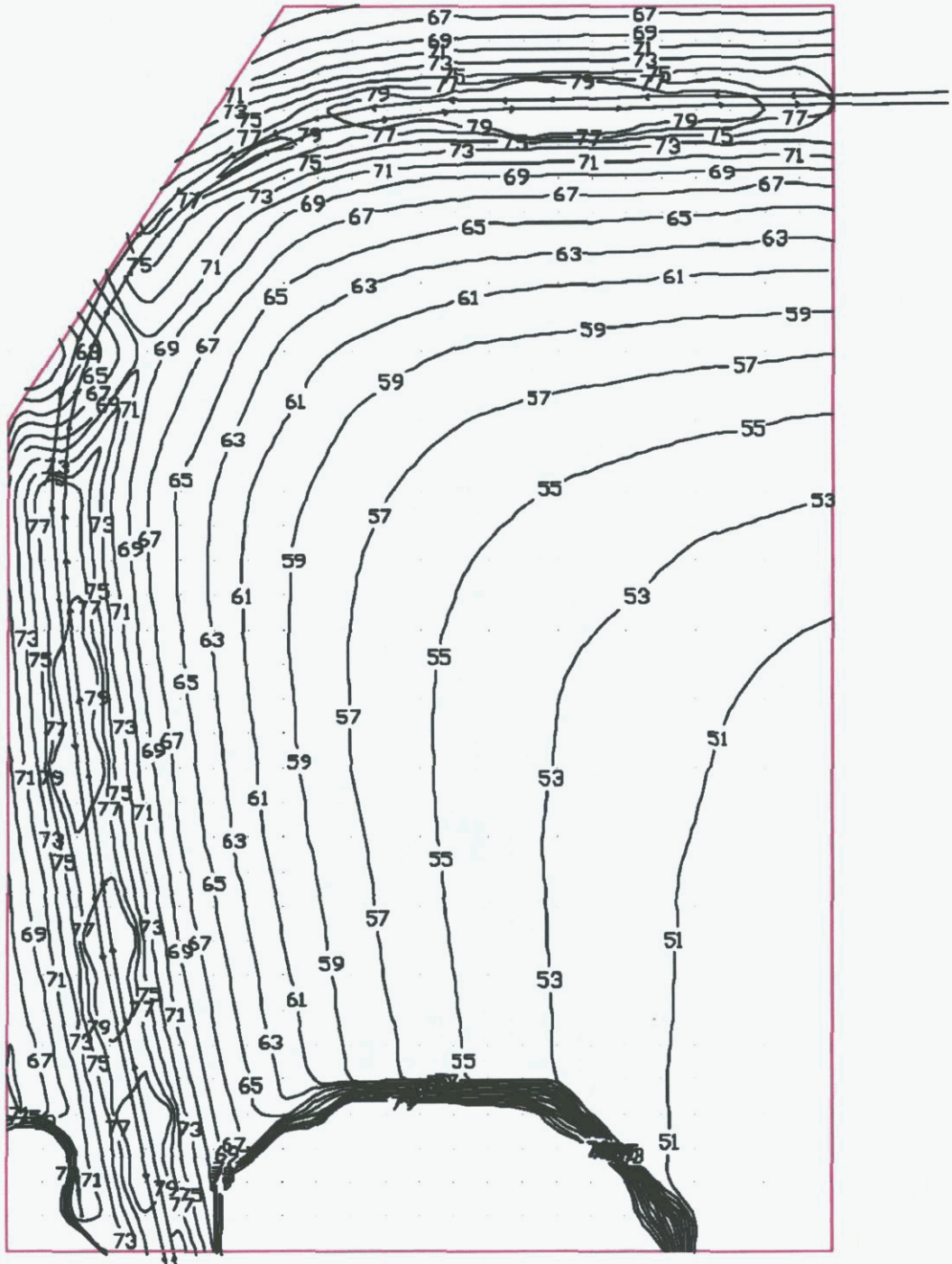
Fig6_Future_Contour.pmd -NJ

Future Noise Contour Map for Deer Springs Road

TERI CENTER FOR RESEARCH AND LIFE PLANNING EIR - ACOUSTIC REPORT

HELIX

Figure 6



* All computed values should have 2dBA added

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TNM-generated Deer Springs Road Future Noise Contours

TERI CENTER FOR RESEARCH AND LIFE PLANNING EIR - ACOUSTIC REPORT

HELIX

Figure 7

On-site Non-transportation Noise Sources

Project non-transportation noise sources include building HVAC systems; children using playgrounds, grounds maintenance, and other small facilities use noise sources. These sources are addressed in Section 3.0.

b. Potential Noise Impact Identification

The County of San Diego Guidelines identify any residence and/or typically human-occupied indoor area, or residential outdoor use area as an NSLU.

Off-site Noise Impacts Due to Project Generated Off-site Traffic

The increase of 647 vehicles a day due to the proposed project-generated traffic over the existing 16,300 ADT roadway traffic would represent less than a 4.0 percent traffic increase.

Exterior Locations

The less than 4.0 percent traffic increase would represent a less than 0.2 dBA increase of ambient exterior noise at any sensitive receiver compared to the existing roadway traffic noise. **Impact: Not Significant**

Interior Locations

The less than 4.0 percent traffic increase would represent less than 0.2 dBA increase of ambient interior noise compared to the existing roadway traffic noise. **Impact: Not Significant**

Off-site Noise Impacts Due to On-site Traffic

The highest calculated property line impact is an hourly level of 59.1 dBA L_{EQ} If this level is assumed for the complete day (7 a.m. to 7 p.m.) it would have a worst case property line impact of 56.1 dB CNEL. The calculated receiver noise levels are included in Appendix B10 for on-site traffic.

Exterior Locations

The calculated 56.1 dB CNEL is below the 60 dB CNEL threshold for exterior use impacts. **Impact: Not Significant**

Interior Locations

The closest residence (NSLU) is adjacent the north of the site approximately 40 feet north of the site property line. This residence is already impacted by traffic noise over 60 dB CNEL. The project roadway impact at peak traffic times would be approximately 56 dBA at a second story in a direct line of site to the residence from the driveway; for the daytime operations this is less than 53 dB CNEL. There would not be an increase of 10 dB CNEL from existing conditions nor would there be impacts which would create an interior impact over 45 dB CNEL based on a basic 15 dB CNEL decrease from

exterior to interior (presumed by Title 24 California Building Code minimum residential exterior to interior noise control). **Impact: Not Significant**

Off-site Noise Impacts Due to Project On-site Non-transportation Noise Sources

On-site non-transportation noise sources are analyzed in Section 3.0.

On-site Noise Impacts Due to Off-site Transportation Noise

Exterior

The receiver locations, on-site buildings, and calculated noise data used in this analysis are included in Appendix B9 (Traffic and Roadway Data are the same as the Future Contours) through X (on-site Buildings which provide sufficient shielding for the on-site driveway). Table 12 provides the Deer Springs Roadway traffic impacts at specified on-site locations. No NSLU exterior use area is impacted by over 60 dB CNEL from off-site transportation noise sources. **Impact: Not Significant**

Table 12
ON-SITE EXTERIOR USE LOCATIONS[1]

Number	Name	Future CNEL (Worst Case)
1	Equestrian Trail[‡2]	76.4
2	Equestrian Facilities[‡2]	75.6
3	Fenced Playground east side of Research Education and Training Building 1	45.9
4	Fenced Playground east side of Research Education and Training Building 2	45.2
5	Central Lawn Terrace	36.6

[1]The illustrated site plan showing these areas is provided as Figure 3.
[‡2]Non-residential equestrian facilities are not considered a noise-controlled exterior use area and are provided for the purpose of information only.

Interior

It is generally accepted that modern construction provides a minimum 15 dB CNEL reduction in exterior to interior noise. Therefore, any building located completely outside the 65 dB CNEL contour is assumed to be in compliance with a maximum interior noise level of 50 dB CNEL for daytime occupied only interior space.

Per the current plans, the buildings that may be subject to a noise impact greater than 65 dB CNEL are the Multi-purpose Activity Center and the existing historic Merriam Ranch House. The Merriam House if used as a residence is exempt from analysis for residential purposes. However, the Merriam House (if it is remodeled for other uses) and the Multi-purpose Activity Center may be in excess of the allowable maximum interior noise level of 50 dB CNEL. **Impact: Significant and Mitigable**

On-site Noise Impacts Due to Off-site Non-transportation Noise

Any off-site noise sources are controlled by the County of San Diego property line noise level ordinances, which are analyzed in Section 3.0. The impacts from any source except one, which is operating under a Sec. 36.417 exemption, will be in compliance with the requirements for an NSLU.

On-site Noise Impacts Due to Project Transportation Noise

The 60 dB CNEL noise contour for the on-site driveway is the approximate edge of the driveway. **Impact: Not Significant**

Exterior Impacts

Because all NSLU areas are setback from the driveways they will be impacted by a noise less than 60 dB CNEL. **Impact: Not Significant**

Interior Impacts

It is generally accepted that modern construction provides a minimum 15 dB CNEL reduction in exterior to interior noise. Therefore, any building (NSLU) located completely outside the 65 dB CNEL contour is assumed to be in compliance with a maximum interior noise level of 50 dB CNEL for daytime occupied only interior space. **Impact: Not Significant**

On-site Noise Impacts Due to Project Non-transportation Noise

Analysis addressing noise impacts at on-site NSLU locations due to on-site non-transportation noise sources is within Section 3.0.

c. Design Considerations

The planned Project on-site buildings provide significant noise shielding for the on-site exterior NSLU locations from noise created by Deer Springs Road. They are therefore used in the TNM model to calculate the specific future noise levels at these exterior NSLU locations.

2.3 Mitigated Noise Impacts

Interior noise levels may be reduced significantly more than 15 dBA from exterior noise levels by the use of enhanced glazing, enhanced wall design, and forced air ventilation. With these techniques it is readily feasible to build (or modify existing structures) to comply with the NSLU requirements.

Mitigation: A noise easement prohibiting building construction or remodeling within a 200 feet distance of the centerline of Deer Springs Road will be granted. This easement may be relieved with the submittal of an exterior to interior noise study for the final building plan submittal for any building placed within this 200-foot noise easement.

a. Mitigation Measurement Calculations

An exterior to interior noise control study requires an interior space layout, exterior wall construction, and glazing details as part of the analysis. This type of detail is rarely available during initial site planning. The noise easement is planned to ensure that areas which require that interior noise levels in compliance with code will be properly addressed in future building plan submittals. Any noise abatement measures (i.e., door and window treatments) would be subject to the Secretary of the Interior standards with further review by the County of San Diego Historic Site Board.

b. Design Consideration Calculations

The planned Project on-site buildings provide significant noise shielding for the on-site exterior NSLU locations from noise created by Deer Springs Road. They are therefore used in the TNM model to calculate the specific future noise levels at these exterior NSLU locations.

2.4 Cumulative Noise Impacts

Cumulative impacts were previously analyzed above, as the calculations of the off-site transportation noise sources included year 2030 traffic, including the Merriam Project, which would be located north of the Project site along Deer Springs Road. The Proposed Project would contribute approximately two percent of the total cumulative traffic along Deer Springs Road. All impacts would be less than significant with the exception of interior noise levels within the Multi-purpose Activity Center and the existing Merriam Ranch House. This impact will be mitigated to less than significant levels, as discussed above.

2.5 Conclusions

The Merriam House (if it is remodeled for uses other than residential) and the Multi-purpose Activity Center may be in excess of the allowable maximum interior noise level of 50 dB CNEL associated with traffic noise from Deer Springs Road. Such an impact would be significant. With a noise easement to control planned construction for all locations at a future 65 CNEL or greater on-site NSLUs for the Project, all impacts are mitigated to a less than significant condition for the NSLUs.

3.0 OPERATION ACTIVITES

3.1 Guidelines for the Determination of Significance

It shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level at any point on or beyond the boundaries of the property will exceed the applicable limits on Table 3 in Section 1.2, above. Exemptions also are noted in Section 1.2.

3.2 Potential Noise Impacts

a. Potential Build-out Noise Conditions

Off-site Non-transportation Noise Sources

No significant off-site non-transportation noise sources have been observed during several site visits. However, the Project site is surrounded by agricultural land use and is subject to potential seasonal and salvage agricultural, daytime only, intermittent noise impacts per County of San Diego Ordinances. Because no current agricultural activities are occurring on these sites, it is not feasible to quantify specific potential future impacts.

On-site Transportation Noise Sources

Cars, vans and buses traveling around the circular Project driveway would generate traffic noise. TNM Modeling is based on the peak hour on-site traffic traveling at 15 mph. Table 11 in Section 2.2, above, provides the Project-generated traffic. The TNM modeler allows the specification of buses as a distinct vehicle type.

On-site Non-Transportation Noise Sources

HVAC Systems

This Project includes the future outdoor installation of HVAC condenser units on the roofs of the proposed buildings, with the exception of the Multi-purpose Activity Center, where the HVAC units would be placed on the ground. The Project planner has specified that the HVAC units would be ten-ton units, with one ton of HVAC planned for every 325 to 350 square feet of habitable space. Based on this information, it was determined that 27 HVAC units would be required on-site.

HVAC units would be installed on each building and would be operated simultaneously. The northern and eastern property lines represent the closest property line boundaries and were the primary focus for calculating mechanical equipment noise levels and barrier effectiveness. It was assumed that all of the HVAC units would be controlled by automatic timers, and would only be in operation from 7:00 a.m. to 7:00 p.m.

For the purpose of this study, the specifications for Carrier 40RMQ012 10-ton HVAC units, which have a Sound Power level of 86 dBA, are used to analyze the noise impact from the 27 HVAC units closest to the northern and eastern property lines. Carrier manufacturer's data shows that the unit stands approximately 4 feet high. When mounted at rooftop level and on a 3-inch thick supporting

concrete slab, the units would have a maximum overall height of 4 feet and 6 inches. A typical cabinet is comprised of solid sheet metal walls, with a top-mounted, quiet operating, vertical discharge cooling fan. Given this cabinet configuration, the condensing unit noise source is considered to be highly directional. The data sheet for the outdoor condensing unit shows the octave-band sound power levels (refer to Appendix C).

Estimated building utilization of HVAC units is shown in Table 13.

Table 13
ESTIMATED HVAC REQUIREMENTS

Building	Building Area (sq.ft.)	Units of A/C	Actual Units
Admin Bldg 1	6,537	2.0	2
Admin Bldg 1	4,967	1.5	2
Training Bldg 1	12,043	3.7	4
Training Bldg 2	8,518	2.6	3
Training Bldg 3	7,089	2.2	2
Training Bldg 4	10,581	3.3	3
Training Bldg 5	10,522	3.2	3
Aquatic Therapy/Recreation Center	6,579	2.0	2
Multi-purpose Activity Center	13,379	4.1	4
Agricultural/Vocational/Maintenance Bldg	7,460	2.3	2
Totals	**87,675**	**26.9**	**27**

Note: Assumes 10-ton HVAC units, with one ton required per 325 sq. ft. of building space.

The HVAC unit locations are supplied in Appendix B26.

Outdoor Activities Noise Source

A typical small school playground of approximately 900 s.f. with 15 to 25 small children at play has been measured at an average noise level of 67.5 dBA L_{EQ} at the playground boundary for a 30-minute play period. The anticipated number of children and the playground size at the Project site are comparable; therefore, the expected average noise level is assumed to be similar.

Miscellaneous Sources

According to the outdoor use schedule prepared by TERI, there would be minimal amounts of noise created on-site due to vocational training, including activities at the wood shop and landscape maintenance. The wood shop activities involve a very small amount of equipment: one table saw, one router, six to eight electric sanders, and two electric hand drills. In addition, the landscaping equipment is estimated to include one lawn mower and one leaf blower. Site waste collection and management would consist of periodic transfer of trash dumpsters to collection trucks. The Proposed Project also incorporates a pool equipment room to be located near the eastern property line, in the

Aquatic Therapy building, by the swimming pools. The proposed pool equipment would include pool pump(s), a filter system, and heaters.

b. Potential Noise Impacts Identification

Off-site Non-transportation Noise Sources Impacts to Project Site

As part of the Major Use Permit, TERI is willing to accept seasonal noise levels in excess of normal daytime code compliance levels per County of San Diego which is generated in compliance with code Section 36.417. While unlikely, it is possible that agricultural operations to the east of the site may create temporary noise impacts within compliance of County of San Diego Codes, which could impact the use of the planned fenced playground areas by noise in excess of the acceptable level of 70 dBA. **Impact: Potentially Significant and Mitigable**

On-site Transportation Noise Source Impacts to Adjacent Properties

TNM Modeling for peak hour traffic of the cars, vans and buses traveling around the circular driveway on site at 15 mph has a highest calculated property line impact of an hourly level of 59.1 dBA L_{EQ} at the eastern property line where it is closest to the driveway. This is in excess of the allowable 50 dBA level. The calculated receiver noise levels are included in Appendix B10 for on-site traffic; a color graphic of the impacts from the on-site driveway and Deer Springs Road is included as Figure ~~7~~8. **Impact: Significant and Mitigable**

On-site Non-transportation Noise Source Impacts to Adjacent Properties

HVAC Systems

Without shielding, the combined rooftop and ground-mounted HVAC units may create a worst-case property line (east of the Administration Building) impact of 53.5 dBA L_{EQ} when all units are operating. This is in excess of the allowable ~~daytime~~ nighttime property line limit of ~~50~~ 45 dBA. Figure ~~8~~ 9 provides a graphic display of HVAC impacts. **Impact: Significant and Mitigable**

Outdoor Activities Noise Source

Noise impacts for the fenced playground areas are calculated by using 15 discrete point sources (children) per playground area (30 cumulative) at a Sound Power level of 80 dBA per source. The locations of children as a point noise source are shown in Appendix B27. The calculated noise level at the property line from two fully occupied playgrounds is 44.7 dBA (see Figure 910 graphic display of the ~~Cadna~~ CADNA model) at the closest property line location east of the playground. This is below the 50 dBA daytime allowable level. **Impact: Not Significant**

Miscellaneous Sources

The wood shop equipment is to be used for training purposes; its use would be intermittent, and the overall wood shop activity is considered to be small-scale. The landscape maintenance equipment use would be intermittent and moving throughout the property. The trash dumpsters would be situated in such a way that the garbage truck would not need to back up on-site, thereby eliminating the use

of the backup alarm on the truck. The trash pickup would not utilize on-site compaction. The proposed pool equipment would be housed inside the building.

Without specific equipment, building design information, and location information it is not feasible to estimate noise impacts. However, with the design considerations discussed above these types of operations are routine and rarely have impacts in excess of 50 dBA. **Impact: Not Significant**

c. Design Considerations

- A six-foot high noise control fence should be built along the northern and eastern property lines to control driveway noise impacts to the adjacent properties.
- The trash dumpsters would be situated in such a way that the garbage truck would not need to back up on-site.
- The buildings need ~~a~~ five-foot high parapet walls shielding the rooftop units.
- All rooftop AC units within 300 feet of the eastern property line, including the Administration Building and Research and Training Buildings 1 and 2, should have a three-sided, five-foot noise control barrier facing the eastern property line and be located as close as possible to each affected HVAC unit.
- The ground mounted HVAC units ~~need~~ should be surrounded with a six-foot high noise control fence ~~surrounding the units~~.

The recommended locations for the parapet walls and the property line fence are shown on Figure 11.

3.3 Mitigated Noise Impacts

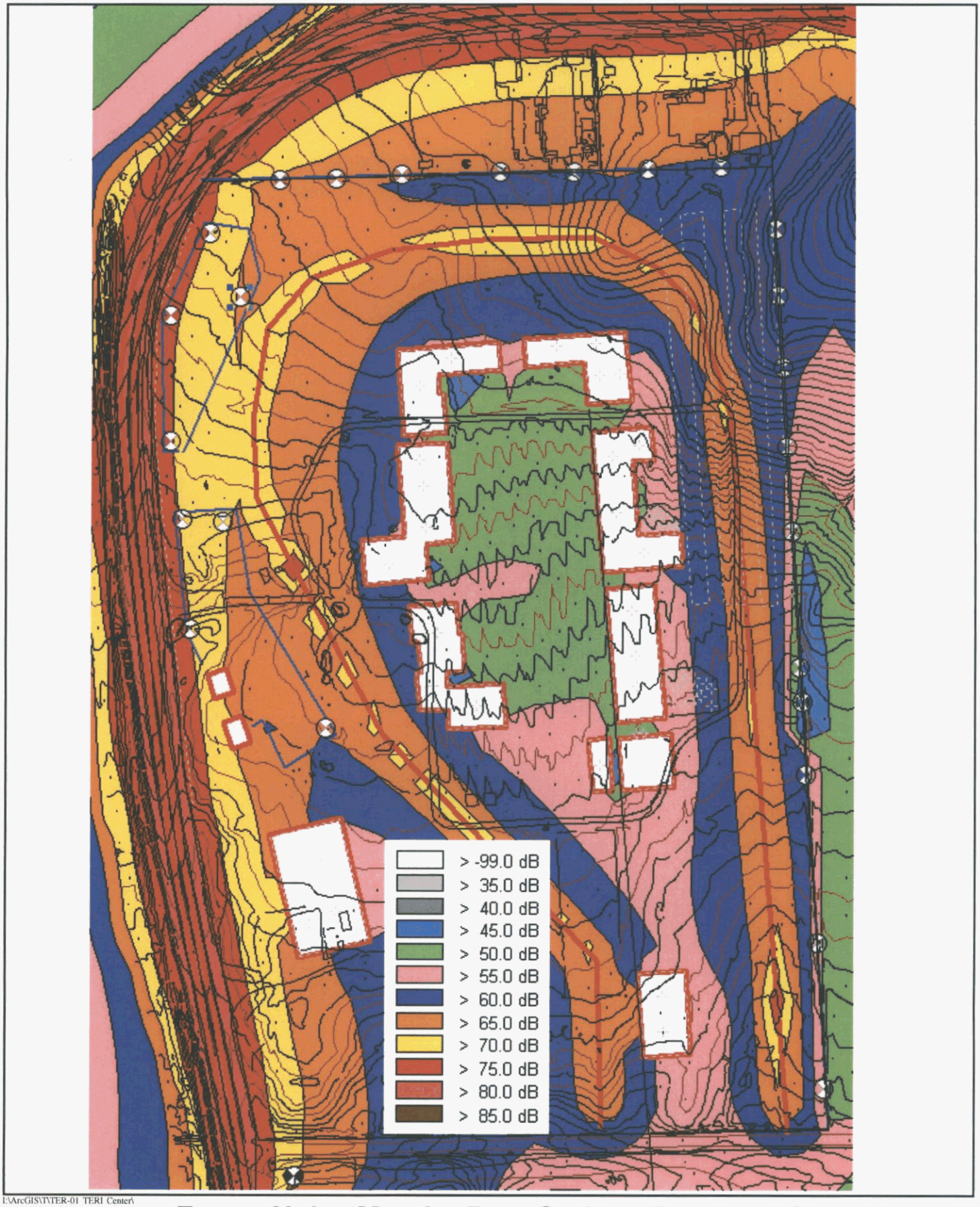
a. Mitigation Measurement Calculations

Mitigation: If temporary loud noise is being generated at the adjacent property, the outdoor playgrounds adjacent to the noise source will not be used.

On-site Transportation Noise

Mitigation: A 6-foot high noise control fence should be built along the northern and eastern property lines to control driveway noise impacts to the adjacent properties.

With mitigation provided by a 6-foot high noise control fence built along the northern and eastern property lines to control driveway noise impacts to the adjacent properties, the noise level would be reduced from an unmitigated 59.1 dBA L_{EQ} to 47.5 dBA L_{EQ} at a distance of 10 feet inside the adjacent property. A color impact graphic is provided as Figure ~~10~~12.



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Future Noise Map for Deer Springs Road and Site Driveway

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Figure 8

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HVAC Unmitigated Noise Map

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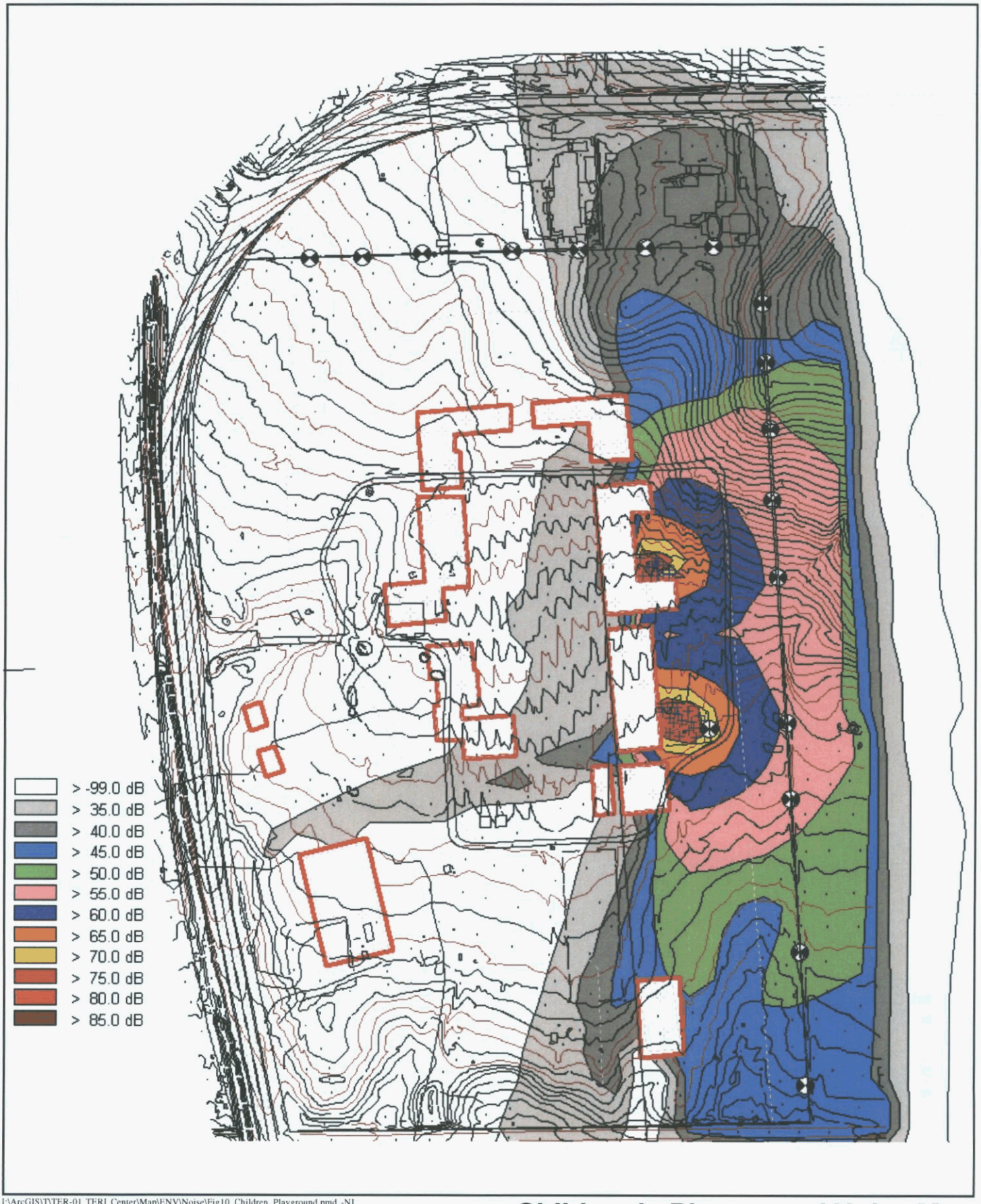
Figure 9



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Children in Playground Noise Map

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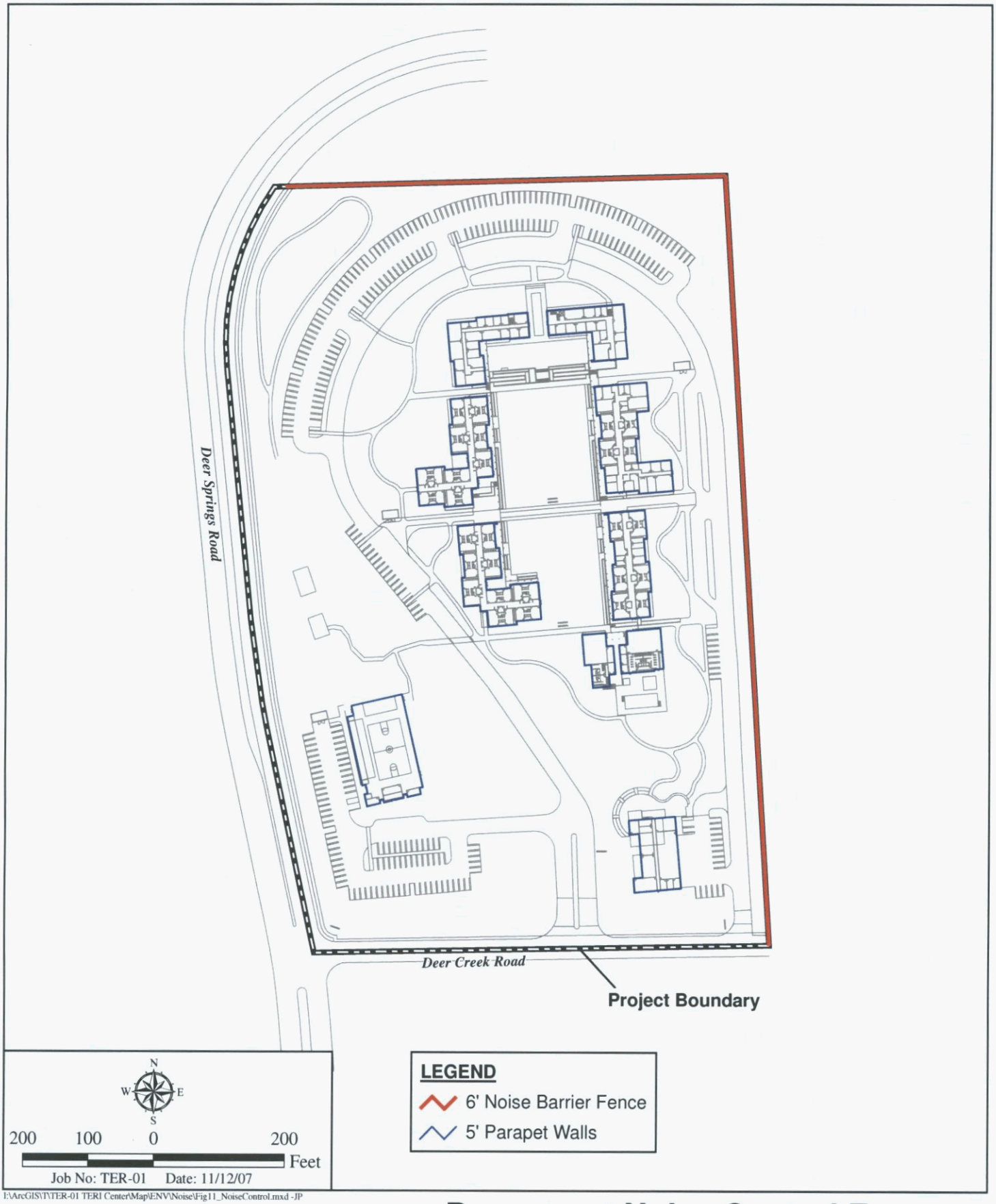
Figure 10



I:\ArcGIS\T\TER-01 TERI Center\Map\ENV\Noise\Fig11_NoiseControl.mxd -JP

Permanent Noise Control Features

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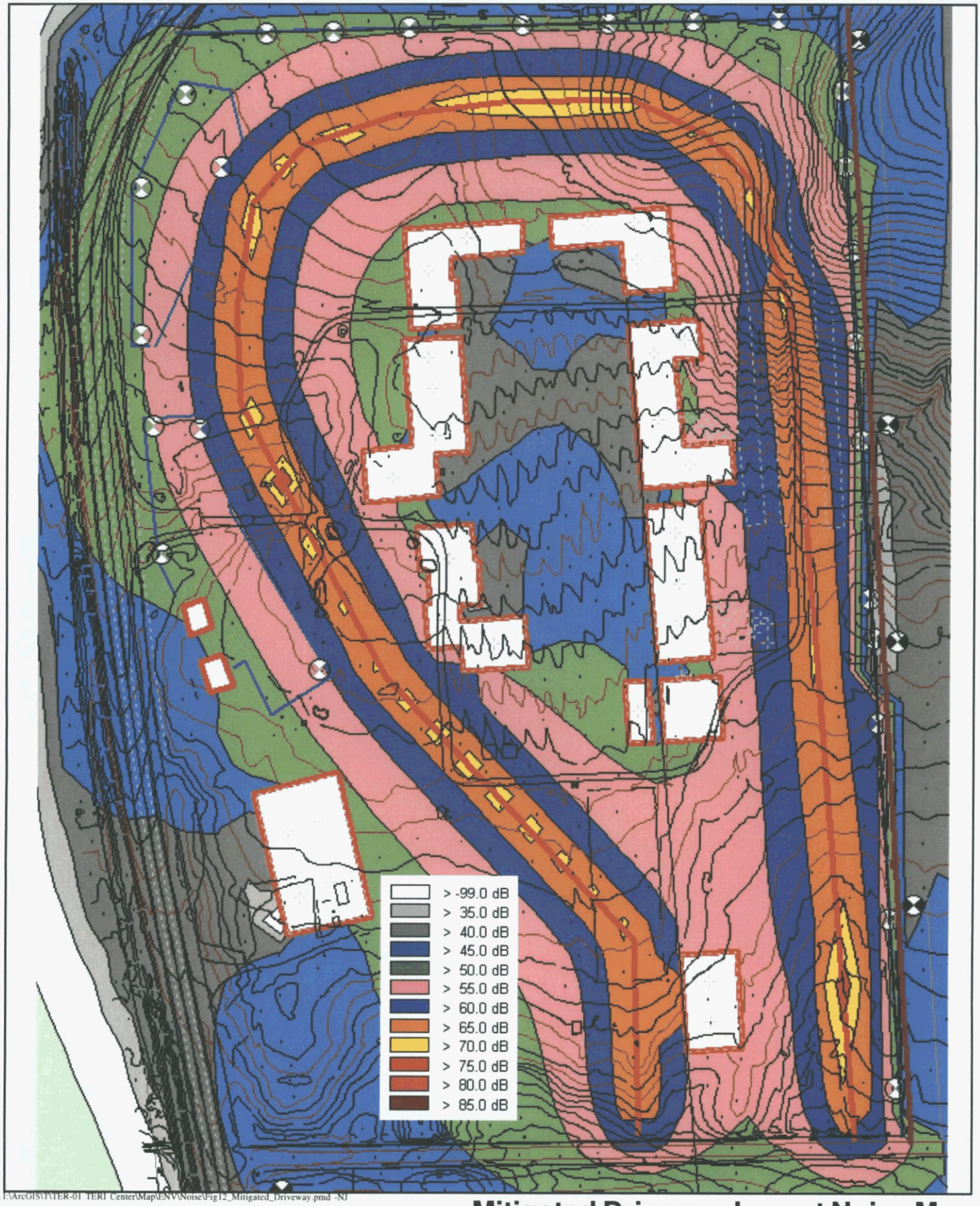
Figure 11



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Mitigated Driveway Impact Noise Map

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Figure 12

HVAC Systems

Mitigation: ~~With mitigation provided by:~~The following mitigation is recommended:

- ~~a~~A 5-foot high parapet wall shielding the rooftop units
- All rooftop AC units within 300 feet of the eastern property line, including the Administration Building and Research and Training Buildings 1 and 2) should have a 3-sided, 5-foot noise control barrier facing the eastern property line and be located as close as possible to each affected HVAC unit
- The ground-mounted HVAC units should be shielded by a 6-foot high noise control wall surrounding the units

Associated noise impacts to the eastern property line would be reduced from 53.5 dBA to 44.8 dBA L_{EQ} with mitigation when all units are operating. A color map showing the mitigated HVAC impact levels is provided as Figure 13.

b. Design Considerations

- The trash dumpsters need to be situated in such a way that the garbage truck would not need to back up on-site.

- The noise control fences/walls need to be planned to fulfill the following requirements:

General Specifications for Sound Attenuation Fence/Wall Construction

A sound attenuation fence/wall should be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least 1-inch total thickness or have a density of at least 3½ pounds per square foot. Where architectural or aesthetic factors allow, glass or clear plastic may be used on the upper portion, if it is desirable to preserve a view. Sheet metal of 18-gauge (minimum) may be used, if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Any door(s) or gate(s) must be designed with overlapping closures on the bottom and sides and meet the minimum specifications of the wall materials described above. The gate(s) may be of 1-inch thick or better wood, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated door jambs.

3.4 Cumulative or Combined Noise Impacts

a. Potential Cumulative Impact Identification

The cumulative impacts of the site mitigated HVAC system, site driveway, and the playgrounds are loudest east of the Administration Building and Training Building 1. The cumulative property line impact at this location is approximately ~~50.3~~49.2 dBA, which is within ~~round off~~ compliance of the 50 dBA level of significance. (Prior to mitigation of the HVAC system noise, combined operational noise levels would be 61.4 dBA at the property line.) **Impact: Not Significant**

b. Mitigation Measurement Calculations

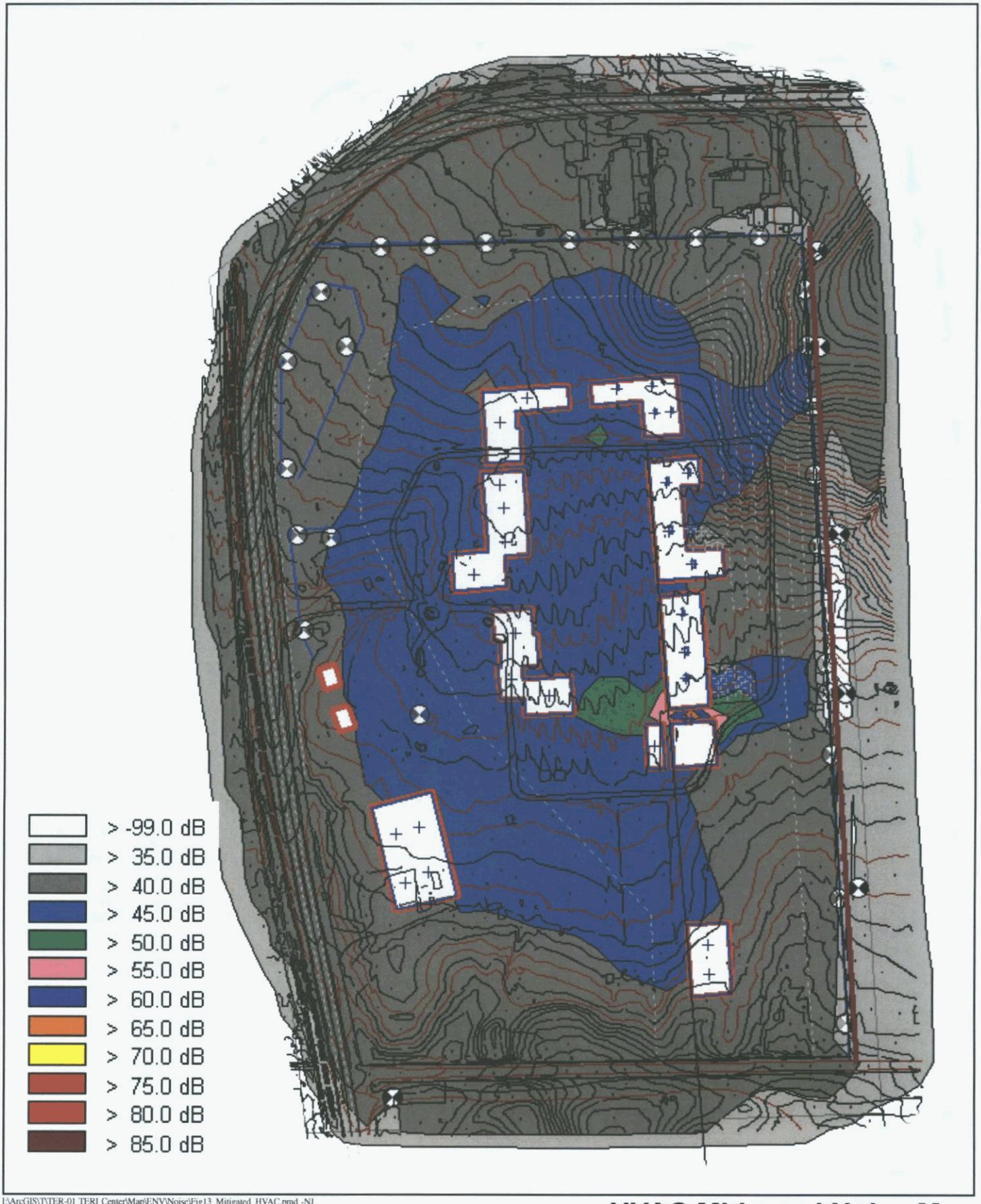
No mitigation is necessary, as impacts would be less than significant.

c. Design Considerations

No design considerations are required.

3.5 Conclusions

With mitigation and design considerations as described above, all known on-site and off-site individual and cumulative impacts can be controlled to a less than significant operation activities condition.



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HVAC Mitigated Noise Map

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Figure 13

4.0 CONSTRUCTION ACTIVITIES

4.1 Guidelines for the Determination of Significance

Guidelines for determining the significance of impacts are addressed in the County of San Diego Noise Ordinance, Section 36.410, Construction Equipment, as provided above in Section 1.2.

4.2 Potential Noise Impacts

The eastern property line is the closest location to all expected construction activities and is the most likely to be impacted by construction activities. However, at this time it contains no NSLU locations within close proximity to the planned construction. However, it is feasible that the site to the east of the Project site could be either developed prior to the development of Project site, in which case it could contain NSLU areas, or the eastern property could be in development at the same time as the site. The northern property is outside the range of any expected significant construction noise (as discussed below).

a. Potential Build-out Noise Conditions

Site construction would entail the use of heavy equipment throughout the site for the full term of construction. Construction activities can be roughly divided into seven phases. These phases may contain some overlap dependent on location and timing. The phases would include the following:

1. Rough grading

   This phase typically consists of the use of heavy equipment, potentially including large dozers, excavators, scrapers, compactor, water truck, and a variety of smaller equipment to create the basic building, road, and outdoor elevations desired.

2. Foundation excavation

   This phase typically involves the use of medium-sized equipment, which may include a small dozer, backhoe or excavator, compactor, water truck, and a variety of smaller equipment to create the finished pad elevation and foundation excavation.

3. Foundation pour

   The individual building pads are created by having concrete delivered from an off-site mixing facility and pumping it with a reed boom truck throughout the foundation area to create a finished building pad.

4. Utilities excavation

   This phase would include the use of an excavator or backhoe and a trencher throughout the site to allow for underground utilities.

5. Building construction

The building framing and exterior is constructed manually with the use of forklifts and light mobile cranes.

6. Finish grading

Typically a grader, water truck, compactor and sometimes a small dozer and/or skidsteer, are used to prepare the site for paving and landscaping.

7. Paving

Concrete or blacktop is delivered to the site from an off-site mixing facility, spread over the planned hard surface areas and is then either compacted or allowed to cure.

Geotechnical information and descriptions are excerpted from the Geotechnical Investigation Report prepared by GEOCON Incorporated Geotechnical Consultants, dated October 11, 2002.

a. First 1 to 2 ½ feet of soil on site are loose topsoil and old alluvium (loose easily moved soil)
b. 3 feet to a variable depth of 5 to 20 feet are Woodson Mountain Granodiorite
c. 5 to 20 feet depth are non-rippable conditions

There are no indications of the presence of large rocks/boulders on-site. No significant import or export of base materials is anticipated for site development. This site would not require any demolition.

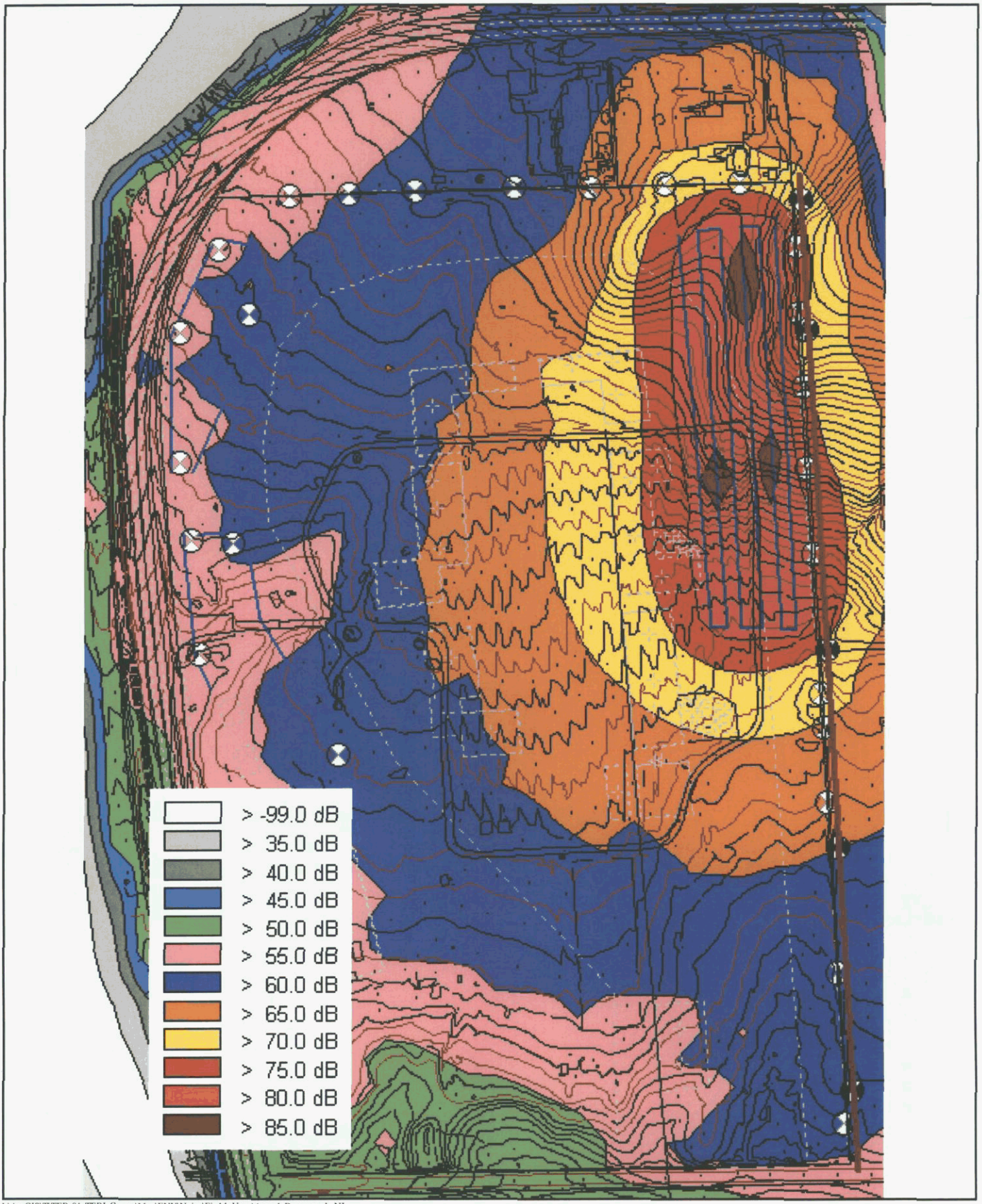
A table of typical construction equipment noise levels is provided as Appendix D.

b. Potential Noise Impact Identification

Rough Grading

The preliminary site grading and utilities plan does not indicate any significant excavation below the depths; which would require blasting on this site. The lack of any large rocks/boulders on the site makes the use of a breaker unlikely. Therefore, the worst off-site noise impacts are likely to happen during rough grading, when a D8 or D9 may be used for ripping the harder subsurface materials close to the eastern property line. The northern and southern property lines would probably not have ripping in close proximity.

A color graphic is provided as Figure ~~12~~14 showing a D9 moving at 1.25 mph making six passes at varying distances from the eastern property line at the highest on-site elevations (most likely area to require heavy ripping). The highest impact level at the adjacent property, east of the probable site high point, which might require ripping, is 76.7 dBA. **Impact: Potentially Significant and Mitigable**



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Unmitigated Dozer Ripping Noise Map

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Figure 14

Foundation Excavation, Foundation Pour, Utilities Excavation, Building Construction, Finish Grading

The site planning is based on building construction no closer than 100 feet to any property line. Given the type and size of the proposed buildings, these construction activities are unlikely to exceed acceptable noise levels and are therefore not analyzed. **Impact: Not Significant**

c. Design Considerations

No design considerations are required.

4.3 Mitigated Noise Impacts

The only construction activity, which may require mitigation, is if the finale plans require excavation of the knoll, to the northeastern side of the property, to be excavated below the level of the loose soils. The required mitigation would be temporary only.

a. Mitigation Measures

At this time, the adjacent property to the east is unused/unoccupied. If it is in the same state at the time of rough site grading, no mitigation is required.

Mitigation: If ripping is required within 65 feet of an adjacent property that is developed with an NSLU, than a temporary noise control barrier of 12 feet in height shall be used for noise shielding along the length of the rip.

The locations for the temporary noise control fence are shown on Figure 15.

The noise impact at the adjacent property with the noted barrier would be approximately 70 dBA L_{EQ} which is below the allowable level of 75 dBA L_{EQ}. A graphic is attached as Figure ~~13~~16 showing the mitigated impacts. **Mitigated Impact: Not Significant**

b. Design Considerations

No design considerations are required.

4.4 Cumulative or Combined Noise Impacts

Based on the size and type of construction, noise impacts for the site would only have a cumulative impact at the single residence to the north of the site. The cumulative impacts would only have the potential to exceed allowable limits if the adjacent eastern property were to have similar rough grading operations with both sites in close proximity to the northern property at the same time. This is a highly unlikely consideration. The addition of the Project construction noise at any locations beyond the immediately adjacent properties would be insignificant. **Impact: Not Significant**

4.5 Conclusions

Construction at the Project site can be done within compliance of the ordinances, with mitigation for heavy ripping, if it is required within the specified distance. The mitigation specified for this operation, if necessary, will provide compliance with the construction ordinances.

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Temporary Noise Control Barrier Locations

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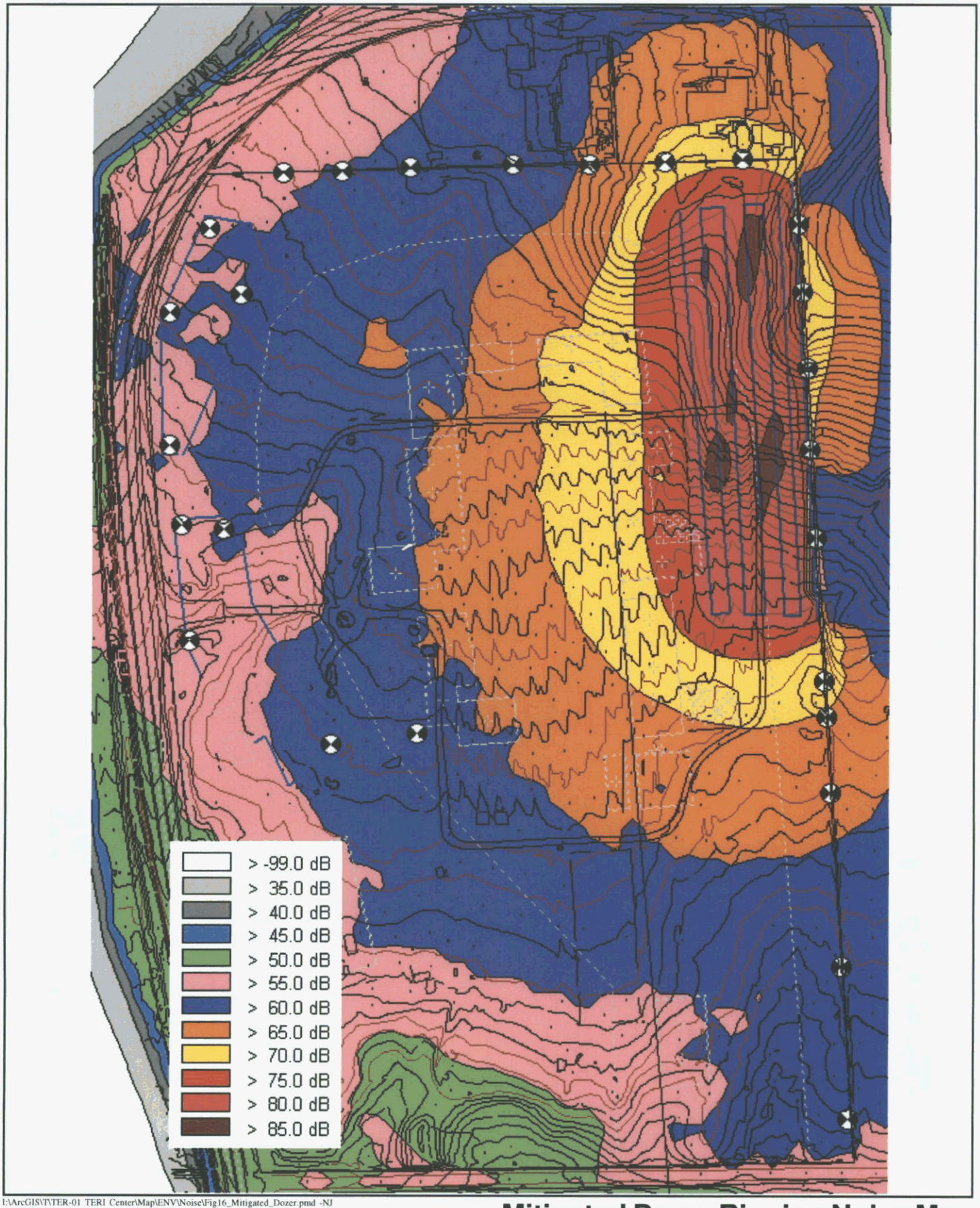
Figure 15



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Mitigated Dozer Ripping Noise Map

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Figure 16

5.0 GROUND-BORNE VIBRATION AND NOISE IMPACTS

5.1 Guidelines for the Determination of Significance

Impacts associated with ground-borne vibration and noise would be significant if Project implementation will expose the uses listed in Table 14 and 15 to ground-borne vibration or noise levels equal to or in excess of the levels shown:

Table 14
GUIDELINES FOR DETERMINING THE SIGNIFICANCE OF GROUND-BORNE VIBRATION AND NOISE IMPACTS

Land Use Category	Ground-Borne Vibration Impact Levels (inches/sec rms)		Ground-Borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations. (research & manufacturing facilities with special vibration constraints)	0.0018 [3]	0.0018 [3]	Not applicable[5]	Not applicable[5]
Category 2: Residences and buildings where people normally sleep. (hotels, hospitals, residences, & other sleeping facilities) [6]	0.0040	0.010	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use. (schools, churches, libraries, other institutions, & quiet offices) [6]	0.0056	0.014	40 dBA	48 dBA

Source: U.S. Department of Transportation, Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006.

1. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.
2. "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.
3. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.
4. Vibration-sensitive equipment is not sensitive to ground-borne noise.
5. There are some buildings, such as concert halls, TV and recording studios, and theaters that can be very sensitive to vibration and noise but do not fit into any of the three categories. Table 4 gives criteria for acceptable levels of ground-borne vibration and noise for these various types of special uses.
6. For Categories 2 and 3 with occupied facilities, isolated events such as blasting are significant when the peak particle velocity (PPV) exceeds one inch per second. Continuous or frequent intermittent vibration sources such as impact pile drivers are significant when their PPV exceeds 0.1 inch per second. More specific criteria for structures and potential annoyance were developed by Caltrans (2004) and will be used to evaluate these continuous or transient sources in San Diego County.

Table 15 GUIDELINES FOR DETERMINING SIGNIFICANCE OF GROUND-BORNE VIBRATION AND NOISE IMPACTS FOR SPECIAL BUILDINGS				
Type of Building or Room	Ground-borne Vibration Impact Levels (inches/sec rms)		Ground-borne Noise Impact Levels (dB re 20 micro Pascals)	
	Frequent Events[1]	Infrequent Events[2]	Frequent Events[1]	Infrequent Events[2]
Concert Halls, TV Studios and Recording Studios	0.0018	0.0018	25 dBA	25 dBA
Auditoriums	0.0040	0.010	30 dBA	38 dBA
Theaters	0.0040	0.010	35 dBA	43 dBA

Source: U.S. Department of Transportation, Federal Transit Administration, "Transit Noise and Vibration Impact Assessment," May 2006.

1. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.
2. "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.

5.2 Potential and Mitigated Noise Impacts

No post-construction on-site or observed off-site sources have the potential of creating ground-borne vibration or low frequency noise of significance. Only the potential brief operation of a heavy dozer during project construction has the potential of creating significant ground borne vibration or low frequency noise.

Soft soils such as this site tend to rapidly attenuate low-level ground borne vibration from sources such as a dozer. Due to the damping effects of soft soil a dozer is typically expected to be below 0.0040 in/sec rms at a distance of greater than 50 feet from the dozer operation. The existing residence to the north of the site is the closest NSLU and it further than this from the potential area, which may require ripping. **Impact: Not Significant**

5.3 Conclusions

No significant impacts associated with ground-borne vibration or noise would occur during construction of the Project.

6.0 SUMMARY OF PROJECT IMPACTS, MITIGATION AND CONCLUSION

Multi-purpose Activity Center and the existing historic Merriam Ranch House may be subject to a noise impact greater than 65 dB CNEL due to noises associated with traffic on Deer Springs Road. These two buildings also may be in excess of the allowable maximum interior noise level of 50 dB CNEL. Such impacts would be significant, but mitigable. As mitigation, a noise easement prohibiting building construction or remodeling within 200 feet of the centerline of Deer Springs Road will be granted. This easement may be relieved with the submittal of an exterior to interior noise study for the final building plan submittal for any building placed within the 200 feet noise easement.

While unlikely, it is possible that agricultural operations to the east of the site may create temporary noise impacts in excess of the acceptable level of 70 dBA, which could affect the use of the planned fenced playground areas. This would result in a significant, but mitigable impact. As mitigation, if such temporary loud noise is being generated at the adjacent property, the outdoor playgrounds adjacent the noise source will not be used.

Cars, vans and buses traveling around the circular driveway on site at 15 mph could potentially result in an hourly level of 59.1 dBA L_{EQ} at the eastern property boundary during the peak hour. This impact would be significant because it is in excess of the allowable 50 dBA level. Mitigation would include construction of a 6-foot high noise control fence built along the northern and eastern property lines to control driveway noise impacts to the adjacent properties. With mitigation, impacts would be less than significant. Figure ~~14~~17 shows a three-dimensional site view of the noise map for Deer Springs Road and the on-site driveway.

The operation of all rooftop and ground-mounted HVAC units at the same time without shielding would result in an impact of 53.5 dBA L_{EQ}, which is in excess of the allowable daytime property line limit of 50 dBA. This significant impacts would be mitigated by construction of a 5-foot high parapet wall to shield the rooftop units and a 6-foot high noise control wall surrounding the ground-mounted HVAC units, which would reduce noise level to 49.7 dBA L_{EQ} when all units are operating. The mitigation would reduce impacts to less than significant levels.

Construction activities, which may include ripping, to the east of the probable high point of the site would result in a maximum of 76.7 dBA at the property line. This impact would be significant, but mitigable. At this time, the adjacent property to the east is unused/unoccupied. If it is in the same state at the time of rough site grading, no mitigation is required. If ripping is required within 65 feet of an adjacent property that is developed with an NSLU, a temporary 12-foot high noise control barrier will be used for noise shielding along the length of the rip. The noise impact at the adjacent property with the noted barrier would be approximately 70 dBA L_{EQ} which is below the allowable level of 75 dBA L_{EQ}.

7.0 LIST OF MITIGATION MEASURES AND DESIGN CONSIDERATIONS

Mitigation

- A noise easement prohibiting building construction or remodeling within a 200 feet distance of the centerline of Deer Springs Road will be granted. This easement may be relieved with the submittal of an exterior to interior noise study for the final building plan submittal for any building placed within this 200 feet noise easement.

- If temporary loud noise is being generated at the adjacent property, the outdoor playgrounds adjacent the noise source will not be used.

- A six-foot high noise control fence should be built along the northern and eastern property lines to control driveway noise impacts to the adjacent properties.

- A five-foot high parapet wall will be constructed to shield the rooftop units and the ground-mounted HVAC will be shielded by a six-foot high noise control wall surrounding the units.

- All rooftop AC units within 300 feet of the eastern property line, including the Administration Building and Research and Training Buildings 1 and 2, shall have a three-sided, five-foot noise control barrier facing the eastern property line and be located as close as possible to each affected HVAC unit.

- If ripping is required within 65 feet of an adjacent property that is developed with an NSLU, than a temporary noise control barrier of 12 feet in height shall be used for noise shielding along the length of the rip.

Design Considerations

- The planned Project on-site buildings provide significant noise shielding for the on-site exterior NSLU locations from noise created by Deer Springs Road. They are therefore used in the TNM model to calculate the specific future noise levels at these exterior NSLU locations.

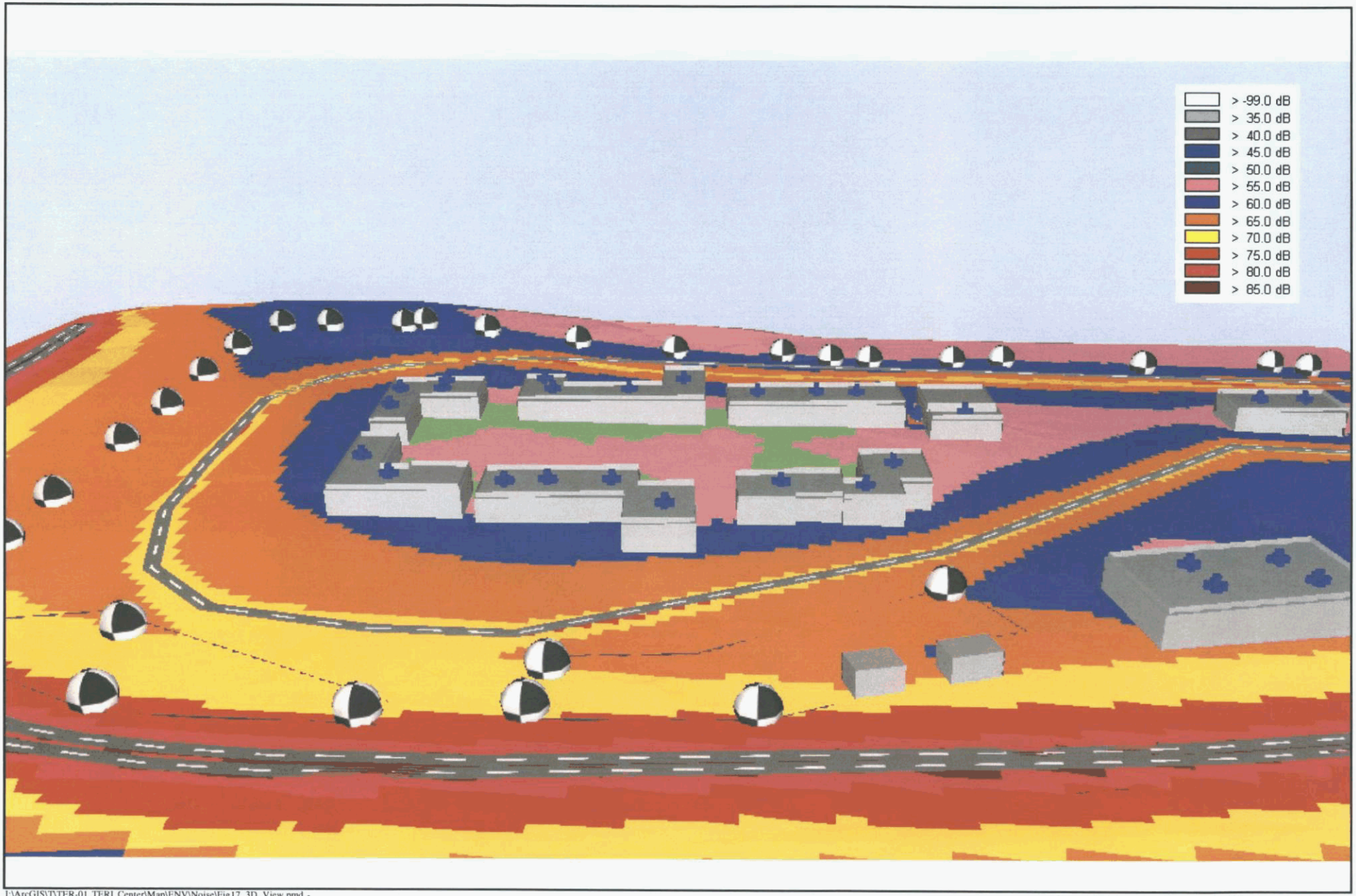
- A 6-foot high noise control fence should be built along the northern and eastern property lines to control driveway noise impacts to the adjacent properties.

- The trash dumpsters would be situated in such a way that the garbage truck would not need to back up on-site.

- The buildings ~~need~~ should incorporate a 5-foot high parapet wall shielding the rooftop units.

- The ground mounted HVAC units ~~need~~ should be surrounded with a 6-foot high noise control fence ~~surrounding the units~~.

- The trash dumpsters need to be situated in such a way that the garbage truck would not need to back up on-site.



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3D Finished Site View

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Figure 17

- The noise control fences/walls need to be planned to fulfill the following requirements:

General Specifications for Sound Attenuation Fence/Wall Construction

A sound attenuation fence/wall should be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least 1-inch total thickness or have a density of at least 3½ pounds per square foot. Where architectural or aesthetic factors allow, glass or clear plastic may be used on the upper portion, if it is desirable to preserve a view. Sheet metal of 18-gauge (minimum) may be used, if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Any door(s) or gate(s) must be designed with overlapping closures on the bottom and sides and meet the minimum specifications of the wall materials described above. The gate(s) may be of 1-inch thick or better wood, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated door jambs.

8.0 CERTIFICATION

This report is based on the related Project information received and measured noise levels, and represents a true and factual analysis of the acoustical impact issues associated with the construction and use of the proposed T.E.R.I., Inc. Center for Research and Life Planning at 555 Deer Springs Road, San Marcos, California 92069.

This report was prepared by Charles Terry, County-approved CEQA Consultant for Acoustics and Noise.

_____

Appendix A

REFERENCES

APPENDIX A

REFERENCES

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County of San Diego
Noise Element to the General Plan.

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APPENDIX B

MODELING DATUM INFORMATION

Appendix B1: Modeling Datum Information			
Deer Creek East and West Bound Lane Measurement Traffic Count Data (count is per each lane)			
All Location Values in Meters			
Datum 0,0	World Coordinates		33^{0} 11' 37.36" N
			117^{0} 09' 06.37" W
			232.9 Meters
Vehicle Type	Count	Speed km/hr	
Auto	300	85	
Medium Truck	24	65	
Heavy Truck	21	60	
Buses	0	0	
Motorcycle	0	0	

Appendix B2: Modeling Datum Information				
Data Deer Creek East Bound Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33° 11' 37.36" N
				117° 09' 06.37" W
				232.9 Meters
	Coordinates			
Element	X	Y	Elevation	
point1	83.0	-541.0	201.0	
point2	75.4	-450.6	201.0	
point3	71.0	-413.0	201.8	
point4	65.0	-381.7	225.5	
point5	63.2	-368.7	226.2	
point6	60.6	-352.2	226.2	
point7	55.2	-324.5	226.8	
point8	46.2	-282.6	227.2	
point9	42.5	-264.9	227.7	
point10	38.0	-239.8	227.7	
point11	34.2	-215.8	228.2	
point12	29.0	-176.9	229.5	
point13	25.8	-149.4	230.0	
point14	22.0	-117.4	230.6	
point15	20.9	-99.4	231.3	
point16	20.3	-83.2	231.3	
point17	20.6	-64.9	232.0	
point18	22.0	-51.1	232.3	
point19	25.0	-38.2	232.4	
point20	29.5	-25.7	232.9	
point21	35.8	-9.7	233.1	
point22	44.5	4.5	233.6	
point23	54.6	17.8	234.1	
point24	69.9	32.7	234.6	
point25	94.6	47.3	235.3	
point26	113.0	54.6	235.8	
point27	137.7	58.8	236.2	
point28	159.6	61.2	237.0	
point29	183.8	62.5	237.7	
point30	222.8	62.6	238.4	
point31	259.5	63.9	240.2	
point32	287.3	64.2	236.0	
point33	397.9	65.2	235.0	

Appendix B3: Modeling Datum Information				
Data Deer Creek West Bound Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33° 11' 37.36" N 117° 09' 06.37" W 232.9 Meters
	Coordinates			
Element	X	Y	Elevation	
Point34	398.5	70.0	235.0	
Point35	284.4	67.2	235.9	
Point36	256.5	67.2	240.1	
Point37	231.2	66.8	238.9	
Point38	196.7	65.8	238.2	
Point39	179.7	65.5	237.7	
Point40	160.2	65.5	237.1	
Point41	132.0	63.0	236.2	
Point42	111.2	58.8	235.9	
Point43	96.2	53.3	235.8	
Point44	80.6	45.6	235.3	
Point45	61.1	32.1	234.9	
Point46	46.5	16.4	234.3	
Point47	35.3	1.1	233.8	
Point48	25.2	-20.8	233.2	
Point49	18.6	-41.3	232.8	
Point50	15.5	-65.0	232.2	
Point51	15.8	-82.9	231.3	
Point52	18.3	-115.2	230.5	
Point53	24.1	-167.7	229.7	
Point54	31.8	-223.2	228.1	
Point55	34.8	-244.1	227.7	
Point56	45.1	-294.8	226.9	
Point57	50.8	-323.5	226.6	
Point58	57.4	-354.4	226.0	
Point59	58.8	-364.9	225.9	
Point60	60.9	-381.6	223.6	
Point61	70.0	-439.3	183.0	
Point62	79.0	-543.6	183.0	

Appendix B4: Modeling Datum Information					
Site Visit Comparison Receiver					
All Location Values in Meters					
Datum 0,0	World Coordinates			33^0 11' 37.36" N 117^0 09' 06.37" W 232.9 Meters	
	Coordinates			dBA	
Element	X	Y	Elevation	L_{EQ}	CNEL
Receiver1	76.6	-358	228	68.1	70.1

Appendix B5: Modeling Datum Information			
Deer Creek East Bound Lane Future Traffic Count Data			
All Location Values in Meters			
Datum 0,0	World Coordinates		33^0 11' 37.36" N
			117^0 09' 06.37" W
			232.9 Meters
Vehicle Type	Count	Speed km/hr	
Auto	1295	85	
Medium Truck	48	70	
Heavy Truck	27	65	
Buses	0	0	
Motorcycle	0	0	

Appendix B6: Future Traffic Modeling Datum Information			
Deer Creek West Bound Lane Future Traffic Count Data			
All Location Values in Meters			
Datum 0,0	World Coordinates		33^0 11' 37.36" N
			117^0 09' 06.37" W
			232.9 Meters
Vehicle Type	Count	Speed km/hr	
Auto	1295	85	
Medium Truck	48	70	
Heavy Truck	27	65	
Buses	0	0	
Motorcycle	0	0	

Appendix B7: Modeling Datum Information					
Future Noise Contour Receiver Locations					
All Location Values in Meters					
Datum 0,0	World Coordinates			33^0 11' 37.36" N 117^0 09' 06.37" W 232.9 Meters	
	Coordinates			dBA	
Element	X	Y	Elevation	L_{EQ}	CNEL
Receiver1	240.22	49.11	238.61	73.4	75.4
Receiver2	192.19	47.45	237.55	73.0	75.0
Receiver3	146.36	44.14	236.28	72.4	74.4
Receiver4	110.47	36.96	235.41	72.4	74.4
Receiver5	64.65	5.49	234.02	72.4	74.4
Receiver6	39.8	-42.54	232.65	72.5	74.5
Receiver7	35.38	-97.2	231.39	72.9	74.9
Receiver8	38.7	-138.61	230.43	73.4	75.4
Receiver9	44.77	-181.68	229.4	73.1	75.1
Receiver10	53.6	-237.44	228.53	72.7	74.7
Receiver11	62.99	-289.9	227.82	73.2	75.2
Receiver12	71.27	-337.38	226.57	74.0	76.0
Receiver13	217.59	33.1	237.77	67.9	69.9
Receiver14	166.24	31.44	236.3	67.7	69.7
Receiver15	113.78	18.19	235.16	67.2	69.2
Receiver16	71.27	-16.59	233.69	67.0	69.0
Receiver17	53.6	-69.6	232.32	67.0	69.0
Receiver18	53.6	-118.18	231.04	67.1	69.1
Receiver19	61.88	-200.45	229.97	67.5	69.5
Receiver20	72.38	-261.19	228.91	67.7	69.7
Receiver21	86.18	-330.75	227.62	98.9	100.9
Receiver22	219.79	-1.69	237.74	61.0	63.0
Receiver23	166.24	-17.7	235.47	59.8	61.8
Receiver24	118.75	-53.03	233.61	59.4	61.4
Receiver25	103.85	-116.53	231.68	59.2	61.2
Receiver26	104.95	-196.03	230.53	59.7	61.7
Receiver27	112.13	-283.27	228.42	60.8	62.8
Receiver28	255.13	-79.54	237.27	53.8	55.8
Receiver29	221.45	-123.71	231.7	53.1	55.1
Receiver30	201.57	-192.17	230.12	53.0	55.0
Receiver31	191.08	-280.51	228.96	53.6	55.6

Appendix B8: Modeling Datum Information			
Onsite Driveway Traffic Count Data			
All Location Values in Meters			
Datum 0,0	World Coordinates		33^0 11' 37.36" N 117^0 09' 06.37" W 232.9 Meters
Vehicle Type	Count	Speed	
Auto	212	20	
Medium Truck	10	20	
Heavy Truck	0	0	
Buses	56	20	
Motorcycle	0	0	

Appendix B9: Modeling Datum Information				
Onsite Driveway Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33° 11' 37.36" N 117° 09' 06.37" W 232.9 Meters
	Coordinates			
Element	X	Y	Elevation	
Point64	195.2	-347.1	226.6	
Point65	193.0	-285.8	228.9	
Point66	113.3	-201.7	230.4	
Point67	66.4	-114.9	231.2	
Point68	65.1	-86.0	232.2	
Point69	70.3	-52.3	233.1	
Point70	86.5	-33.9	233.7	
Point71	115.9	-23.8	234.5	
Point72	150.1	-19.9	234.9	
Point73	191.2	-19.0	237.4	
Point74	215.3	-30.4	237.0	
Point75	229.3	-44.8	236.6	
Point76	242.0	-84.3	236.2	
Point77	264.0	-348.8	226.5	

Appendix B10: Modeling Datum Information					
Property Line Receivers Modeling Data					
All Location Values in Meters					
Datum 0,0	World Coordinates			33° 11' 37.36" N 117° 09' 06.37" W 232.9 Meters	
	Coordinates			dBA	
Element	X	Y	Elevation	L_{EQ}	CNEL
Receiver33	74.49	1.99	235.61	52.1	49.1
Receiver34	95.67	2.48	236.08	53.8	50.8
Receiver35	120.02	3.94	236.5	54.7	51.7
Receiver36	156.54	4.92	237.2	55.7	52.7
Receiver37	183.81	5.16	238.08	55.7	52.7
Receiver38	210.84	6.13	239.26	53.9	50.9
Receiver39	238.35	6.86	239.69	51.1	48.1
Receiver40	258.56	-16.02	242.41	51.6	48.6
Receiver41	259.78	-40.13	242.18	54.1	51.1
Receiver42	261.72	-66.67	240.59	56.0	53.0
Receiver43	262.94	-95.64	237.09	57.4	54.4
Receiver44	265.13	-126.81	233.76	57.4	54.4
Receiver45	268.21	-177.14	231.03	57.6	54.6
Receiver46	270.65	-216.59	230.41	58.3	55.3
Receiver47	274.58	-278.81	228.84	58.9	55.9
Receiver48	277.02	-332.87	228.22	59.1	56.1

Appendix B11: Modeling *Datum Information*				
Onsite Sensitive Receivers Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33° 11' 37.36" N
				117° 09' 06.37" W
				232.9 Meters
	Coordinates			
Element	X	Y	Elevation	
Point64	195.2	-347.1	226.6	
Point65	193.0	-285.8	228.9	
Point66	113.3	-201.7	230.4	
Point67	66.4	-114.9	231.2	
Point68	65.1	-86.0	232.2	
Point69	70.3	-52.3	233.1	
Point70	86.5	-33.9	233.7	
Point71	115.9	-23.8	234.5	
Point72	150.1	-19.9	234.9	
Point73	191.2	-19.0	237.4	
Point74	215.3	-30.4	237.0	
Point75	229.3	-44.8	236.6	
Point76	242.0	-84.3	236.2	
Point77	264.0	-348.8	226.5	

Appendix B12: Modeling Datum Information				
Bldg 1 Administration Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33^0 11' 37.36" N
				117^0 09' 06.37" W
				232.9 Meters
Element	Coordinates			
	X	Y	Base	Roof
Point1	165.2	-56.5	239.8	10.5
Point2	202.8	-53.2	239.8	10.5
Point3	205.8	-78.9	239.8	10.5
Point4	189.2	-80.2	239.8	10.5
Point5	187.8	-64.4	239.8	10.5
Point6	166.2	-66.4	239.8	10.5

Appendix B13: Modeling Datum Information				
Bldg 2 Research/ Edu/ Train Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33^0 11' 37.36" N
				117^0 09' 06.37" W
				232.9 Meters
	Coordinates			
Element	X	Y	Base	Roof
Point7	157.0	-67.3	234.0	10.5
Point8	156.2	-57.3	234.0	10.5
Point9	118.5	-60.3	234.0	10.5
Point10	121.1	-91.6	234.0	10.5
Point11	136.7	-90.5	234.0	10.5
Point12	135.6	-76.0	234.0	10.5
Point11	134.0	-76.0	234.0	10.5
Point12	133.5	-69.4	234.0	10.5

Appendix B14: Modeling Datum Information				
Bldg 3 Aquatic Therapy Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33° 11' 37.36" N
				117° 09' 06.37" W
				232.9 Meters
	Coordinates			
Element	X	Y	Base	Roof
Point13	201.0	-203.3	230.0	10.5
Point14	202.4	-222.6	230.0	10.5
Point15	221.7	-221.0	230.0	10.5
Point16	220.1	-201.6	230.0	10.5

Appendix B15: Modeling Datum Information				
Bldg 4 Multipurpose Activity Center Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33^0 11' 37.36" N
				117^0 09' 06.37" W
				232.9 Meters
Element	Coordinates			
	X	Y	Base	Roof
Point13	71.1	-239.1	228.0	12.5
Point14	98.1	-232.5	228.0	12.5
Point15	109.5	-278.3	228.0	12.5
Point16	82.4	-284.6	228.0	12.5

Appendix B16: Modeling Datum Information				
Bldg 5 Agricultural Voc Maint Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33^0 11' 37.36" N
				117^0 09' 06.37" W
				232.9 Meters
	Coordinates			
Element	X	Y	Base	Roof
Point17	208.2	-290.4	230.0	7.5
Point18	226.1	-289.0	230.0	7.5
Point19	228.1	-320.2	230.0	7.5
Point20	210.4	-321.9	230.0	7.5

Appendix B17: Modeling Datum Information				
Admin Bldg 4 Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33^0 11' 37.36" N
				117^0 09' 06.37" W
				232.9 Meters
	Coordinates			
Element	X	Y	Base	Roof
Point21	137.03	-94.05	233	10.5
Point22	118.55	-94.87	233	10.5
Point23	121.59	-128.8	233	10.5
Point24	105.31	-130.18	233	10.5
Point22	106.97	-146.72	233	10.5
Point23	130.41	-144.52	233	10.5
Point24	129.03	-131.56	233	10.5
Point25	139.79	-130.45	233	10.5

Appendix B18: Modeling Datum Information				
Research/ Edu/ Train Building 1 Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33^0 11' 37.36" N 117^0 09' 06.37" W 232.9 Meters
	Coordinates			
Element	X	Y	Base	Roof
Point26	190.54	-90.46	233	10.5
Point27	212.6	-88.53	233	10.5
Point28	213.98	-100.67	233	10.5
Point29	205.43	-101.22	233	10.5
Point30	208.29	-128.48	233	10.5
Point31	223.63	-127.36	233	10.5
Point32	224.56	-139.69	233	10.5
Point33	194.99	-141.98	233	10.5

Appendix B19: Modeling Datum Information				
Research/ Edu/ Train Building 2 Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33^0 11' 37.36" N
				117^0 09' 06.37" W
				232.9 Meters
Element	Coordinates			
	X	Y	Base	Roof
Point26	195.78	-148.38	232	10.5
Point27	213.7	-146.45	232	10.5
Point28	218.12	-195.54	232	10.5
Point29	200.19	-197.47	232	10.5

Appendix B20: Modeling Datum Information					
Rec Center Modeling Data					
All Location Values in Meters					
Datum 0,0	World Coordinates			33^0 11' 37.36" N	
				117^0 09' 06.37" W	
				232.9 Meters	
Element	Coordinates				
	X	Y	Base	Roof	
Point30	189.72	-203.64	228	10.5	
Point31	197.37	-202.95	228	10.5	
Point32	198.93	-222.41	228	10.5	
Point33	191.29	-223.1	228	10.5	

Appendix B21: Modeling Datum Information				
Bldg 2 Research/ Edu/ Train Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33^0 11' 37.36" N 117^0 09' 06.37" W 232.9 Meters
	Coordinates			
Element	X	Y	Base	Roof
Point34	140.56	-153.36	231	10.5
Point35	141.95	-164.9	231	10.5
Point36	142.99	-164.73	231	10.5
Point37	144.03	-178.62	231	10.5
Point38	137.08	-179.15	231	10.5
Point39	137.43	-184.36	231	10.5
Point40	157.76	-182.79	231	10.5
Point41	159.32	-198.78	231	10.5
Point42	138.47	-200.17	231	10.5
Point43	137.43	-192.52	231	10.5
Point44	127	-193.22	231	10.5
Point45	125.79	-178.97	231	10.5
Point46	127.52	-178.8	231	10.5
Point47	126.48	-168.2	231	10.5
Point48	124.22	-168.03	231	10.5
Point49	122.83	-154.82	231	10.5

Appendix B22: Modeling Datum Information				
Merriam House Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33° 11' 37.36" N
				117° 09' 06.37" W
				232.9 Meters
	Coordinates			
Element	X	Y	Base	Roof
Point50	57.5	-207.42	229	5
Point51	64.45	-204.99	229	5
Point52	60.97	-195.25	229	5
Point53	54.15	-197.64	229	5

Appendix B23: Modeling Datum Information					
Stable Modeling Data					
All Location Values in Meters					
Datum 0,0	World Coordinates			33^0 11' 37.36" N	
				117^0 09' 06.37" W	
				232.9 Meters	
Element	Coordinates				
	X	Y	Base	Roof	
Point50	50.56	-187.4	229	5	
Point51	47.78	-180.06	229	5	
Point52	55.21	-177.8	229	5	
Point53	57.69	-185.06	229	5	

Appendix B24: Modeling Datum Information				
Northern and Eastern Property Line Fence				
All Location Values in Meters				
Datum 0,0	World Coordinates		33^0 11' 37.36" N	
			117^0 09' 06.37" W	
			232.9 Meters	
Element	Coordinates			
	X	Y	Top	Bottom
Point1	45.17	2.31	235.48	233.48
Point2	254	7.01	240.96	238.96
Point3	256.59	7.66	241.14	239.14
Point4	258.8	-20.67	242.78	240.78
Point5	260.65	-48.36	242.41	240.41
Point6	279	-347.95	228.51	226.51

Appendix B25: Modeling Datum Information					
Adjacent Property Receivers Modeling Data					
All Location Values in Meters					
Datum 0,0	World Coordinates			33^0 11' 37.36" N	
				117^0 09' 06.37" W	
				232.9 Meters	
Element	Coordinates			dBA L_{EQ}	
	X	Y	Elevation		
Receiver49	285	-275	228.91	47.5	
Receiver50	280	-190	230.73	45.1	
Receiver51	275	-130	234.37	45.2	
Receiver52	270	-30	241.71	46.8	

Appendix B26: Modeling Datum Information				
HVAC Unit Locations Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33° 11' 37.36" N
				117° 09' 06.37" W
				232.9 Meters
	Coordinates			
Element	X	Y	Elevation	
HVAC1	200.62	-68.76	241.3	
HVAC2	193.26	-69.37	241.3	
HVAC3	192.03	-57.71	241.3	
HVAC4	177.30	-58.94	241.3	
HVAC5	208.29	-95.15	240.2	
HVAC6	198.47	-99.14	240.2	
HVAC7	200.01	-120.31	240.2	
HVAC8	210.14	-134.73	240.2	
HVAC9	205.53	-155.91	238.3	
HVAC10	207.07	-172.48	238.3	
HVAC11	207.37	-183.83	238.3	
HVAC12	138.64	-63.24	241.0	
HVAC13	126.67	-73.36	241.0	
HVAC14	126.67	-100.67	239.9	
HVAC15	128.21	-110.49	239.9	
HVAC16	129.13	-125.22	239.9	
HVAC17	115.32	-139.03	239.9	
HVAC18	133.42	-164.50	238.7	
HVAC19	132.19	-184.14	238.7	
HVAC20	148.15	-191.20	238.7	
HVAC21	207.81	-201.59	231.3	
HVAC22	210.00	-201.47	231.3	
HVAC23	82.18	-251.03	238.2	
HVAC24	92.30	-248.27	238.2	
HVAC25	86.17	-272.21	238.2	
HVAC26	95.99	-267.30	238.2	
HVAC27	217.19	-298.90	235.4	
HVAC28	217.81	-311.79	235.4	
HVAC29	194.18	-212.98	237.4	

Appendix B27: Modeling Datum Information				
Children In the Playgrounds Modeling Data				
All Location Values in Meters				
Datum 0,0	World Coordinates			33^0 11' 37.36" N
				117^0 09' 06.37" W
				232.9 Meters
	Coordinates			
Element	X	Y	Elevation	
CAP1	211.63	-122.19	232.7	
CAP2	209.39	-119.21	232.9	
CAP3	214.22	-120.31	232.9	
CAP4	215.89	-118.78	233.0	
CAP5	216.77	-120.31	232.9	
CAP6	210.53	-126.11	232.6	
CAP7	216.44	-124.36	232.7	
CAP8	214.03	-122.72	232.8	
CAP9	218.63	-122.06	232.9	
CAP10	216.00	-121.95	232.8	
CAP11	216.00	-126.22	232.6	
CAP12	218.74	-125.13	232.7	
CAP13	220.93	-123.92	232.7	
CAP14	221.26	-125.68	232.6	
CAP15	223.23	-125.13	232.6	
CAP16	218.30	-179.55	231.2	
CAP17	220.71	-179.23	231.2	
CAP18	224.44	-179.55	231.1	
CAP19	221.37	-183.61	231.0	
CAP20	225.09	-182.40	231.0	
CAP21	221.37	-189.74	230.8	
CAP22	223.01	-185.80	230.9	
CAP23	225.64	-191.05	230.7	
CAP24	228.82	-180.87	230.8	
CAP25	233.31	-182.95	230.7	
CAP26	235.61	-184.81	230.6	
CAP27	235.61	-191.05	230.5	
CAP28	229.36	-188.86	230.7	
CAP29	230.24	-185.36	230.8	
CAP30	231.34	-187.77	230.7	

APPENDIX C

OUTDOOR CONDENSING UNIT SOUND POWER LEVELS

ARI* capacity ratings

OUTDOOR UNIT	INDOOR UNIT	COOLING			HEATING			
					Hi-Temp		Low-Temp	
		Net Capacity (Btuh)	EER	IPLV	Net Capacity (Btuh)	COP	Net Capacity (Btuh)	COP
38AQ007†	40RMQ008	75,000	10.3	N/A	71,000	3.2	46,000	2.3
38ARQ008†	40RMQ008	88,000	10.4	N/A	93,000	3.2	57,000	2.2
38ARQ012†	40RMQ012	105,000	10.1	N/A	100,000	3.2	67,000	2.2
38AQS016	40RMQ016	174,000	9.3	11.3	172,000	3.1	100,000	2.1
38ARQ012 x2	40RMQ024	208,000	9.3	10.5	200,000	3.1	122.000	2.2
38AQS016 & 38ARQ012	40RMQ028	272,000	9.3	9.5	270,000	3.1	158,000	2.1

LEGEND

COP — Coefficient of performance = $\frac{\text{Btuh output}}{\text{Btuh input}}$ or

$\frac{\text{Btuh output}}{\text{Unit Power Input x 3.413}}$ (Based on ARI conditions)

EER — Energy Efficiency Ratio = $\frac{\text{Btuh}}{\text{Unit Power Input}}$ (Based on ARI conditions)

IPLV — Integrated Part-Load Value

*Air Conditioning & Refrigeration Institute.

†Energy Star compliant.

NOTES:

1. Standard ratings are net values, reflecting the effects of circulating fan heat. Supplementary electric heat is not included. Ratings are based on:

   Cooling Standard: 80 F db, 67 F wb (wet bulb) indoor entering-air temperature and 95 F db entering-air outdoor unit.

   Hi-Temp Heating Standard: 70 F db (dry bulb) indoor entering-air temperature and 47 F db/43 F wb entering-air outdoor unit.

   Lo-Temp Heating Standard: 70 F db indoor entering-air temperature and 17 F wb/15 F db entering-air outdoor unit.

   Unit combinations are rated in accordance with ARI standard 210/240-95 or 340/360-2000 as appropriate.
2. 38ARQ012 and 38AQS016 are connected to 40RMQ024,028 in duplex configurations.

SOUND LEVELS (dB), 60 Hz

UNIT	OCTAVE BAND								
	63	125	250	500	1000	2000	4000	8000	dBA
38ARQ008	83.1	82.3	82.6	80.9	81.2	78.1	72.8	67.3	85.0
38ARQ012	88.7	82.3	82.6	81.2	81.2	79.2	73.8	67.8	86.0
38AQS016	N/A	93.0	86.0	83.0	80.0	78.0	73.0	71.0	86.0
40RMQ008	95.3	91.3	87.3	86.3	82.3	80.3	76.7	N/A	88.3
40RMQ012	99.0	95.0	91.0	90.0	86.0	84.0	80.0	N/A	92.0
40RMQ016	99.2	95.2	91.2	92.2	86.2	84.2	80.2	N/A	92.9
40RMQ024	102.6	98.6	94.6	95.6	89.6	87.6	83.6	N/A	96.4
40RMQ028	102.5	98.5	94.5	95.5	89.5	87.5	83.5	N/A	96.2

NOTES:

1. Estimated sound power levels, dB re 1 Picowatt.
2. 38ARQ and 38AQS data is based upon a limited amount of actual testing with the estimated sound power data being generated from this data in accordance with ARI standard 370 for large outdoor refrigerating and air-conditioning equipment.
3. 40RMQ data is based on the ASHRAE calculation approach from the ASHRAE handbook 1987 HVAC Systems & Applications, Chapter 52.
4. Since this data is estimated, the sound power levels should not be guaranteed or certified as being the actual sound power levels.
5. The acoustic center of the unit is located at the geometric center of the unit.

APPENDIX D

CONSTRUCTION EQUIPMENT NOISE LEVELS

Construction Equipment Noise Levels			
Equipment Item	**Range of Noise Level at 50 Feet**	**Nominal Noise Level, L_{EQ}, at 50 Feet**	**Height of Noise Source**
Earthmoving			
Backhoes, 200 HP	71 to 93 dBA	85 dBA	
Berm Machine, 100 HP	74 to 84 dBA	80 dBA	
Dozers (Bull)	72 to 96 dBA	86 dBA	12 feet
Front Loaders, 300 HP	71 to 96 dBA	82 dBA	12 feet
Graders (Grader)	73 to 95 dBA	85 dBA	8 feet
Paver	80 to 92 dBA	89 dBA	
Roller, 180 HP	78 to 84 dBA	79 dBA	
Scrapers	73 to 95 dBA	88 dBA	12 feet
Tractors, 200 HP	72 to 96 dBA	84 dBA	
Trencher, 80 HP	76 to 86 dBA	82 dBA	
Truck/Trailer, 200 HP	70 to 92 dBA	82 dBA	
Truck: 125 HP, 150 HP	76 to 85 dBA	80, 82 dBA	
Materials Handling			
Concrete Mixer	70 to 90 dBA	85 dBA	
Concrete Pump	74 to 84 dBA	82 dBA	
Crane, Moveable: 50 HP, 200 HP, 400 HP	75 to 95 dBA	76, 80, 83 dBA	
Derrick	86 to 89 dBA	88 dBA	
Forklift, 40 HP	68 to 82 dBA	80 dBA	
Side Boom, 200 HP	80 to 90 dBA	85 dBA	
Water Truck, 500 HP	79 to 88 dBA	84 dBA	3 feet
Stationary Equipment			
Boiler, 1600 HP	79 to 85 dBA	82 dBA	
Compressors: 100 HP, 200 HP	68 to 87 dBA	78, 81 dBA	
Generators: 20 HP, 400 HP, 1300 HP	69 to 81 dBA	74, 81, 84 dBA	
Pumps: 25 HP, 200 HP, 350 HP	60 to 80 dBA	73, 76, 80 dBA	
Impact Equipment			
Compactor, 20 HP	84 to 90 dBA	86 dBA	8 feet
Jack Hammers	75 to 104 dBA	88 dBA	
Pile Drivers (Peak Level)	90 to 104 dBA	101 dBA	
Pneumatic Tools	82 to 88 dBA	86 dBA	
Rock Drills	90 to 105 dBA	98 dBA	
Steam Boiler (Pile Driver)	83 to 92 dBA	88 dBA	
Other Equipment			
Saws	67 to 92 dBA	78 dBA	
Vibrators	69 to 80 dBA	76 dBA	
Welding Machines: 50 HP, 80 HP	76 to 85 dBA	80, 82 dBA	

Source: Wieland Associates, 1999

APPENDIX E

MINIMUM SPECIFICATIONS FOR A NOISE CONTROL BARRIER OR ENCLOSURE

APPENDIX E
Minimum Specifications For a Noise Control Barrier or Enclosure

The sound attenuation barrier should be a single, solid sound wall. The wall may be made of different materials such as a CMU lower section with wood or glass top or any combinations as long as all joints and seams are sealed and caulked with outdoor weatherproof caulking. The sound attenuation barrier height should be based on the equipment-mounting base. The sound attenuation barrier should be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one-inch thick or have a surface density of at least 3½ pounds per square foot. If wood is used as a portion of the barrier it may not be a single plank layer with butt joints only due to the eventual shrinkage and resultant openings in the wall. We suggest that the wood be a double layer of wood with staggered seams "Ships Lap." Where architectural or aesthetic factors allow, glass or clear plastic may be used on the upper portion, if it is desirable to preserve a view. Sheet metal of 18-gauge (minimum) may be used, if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Any doors or gates must be designed with overlapping closures on the bottom and sides and meet the minimum specifications of the wall materials described above. The gate(s) may be of ¾-inch or better wood, solid-sheet metal of at least 18-gauge metal, or an exterior-grade solid-core steel door with prefabricated doorjambs.